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SEVENTH

ANNUAL REPORT

OF

THE DEPUTY MASTER OF THE MINT.

1876.

Presented to both Houses of Parliament by Command of Her Majesty.

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SEVENTH ANNUAL REPORT

OF

THE DEPUTY MASTER OF THE MINT.

SIR

I HAVE the honour to submit, for the consideration of the Lords Commissioners of Her Majesty's Treasury, my Seventh Annual Report on the Royal Mint.

The year 1876 has been only remarkable for the comparatively trifling amount of coinage executed, and for the clear evidence it has afforded of the inefficiency of the present arrangements of the Mint, and of the ever-increasing risk which they involve of a break-down of machinery and consequent suspension of coinage operations.

On the 21st of July the "first-motion" wheel, to the dangerous state of which Mr. Hill's Memorandum for 1875* called especial attention, and which, under the present defective arrangements, must be used whichever of the two engines is in work, was completely shattered, and it became necessary to suspend the coinage for a period of nearly five months.

It will readily be understood, therefore, that during the year no imperial bronze coin could be struck at the Mint, and that the six Colonial coinages required have all been executed by contract; and it can only be considered most fortunate that this break-down was averted until a gold coinage of nearly 5,000,000*l.* had just been completed, and the demand for coinage generally was not likely to be pressing. If it had occurred while gold coin was required, it is unnecessary to point out the serious consequences which it would have entailed. The fact remains that, if at this or at some other point the machinery of the Mint should become unserviceable, a demand for gold coin could in no way be met, and the Bank of England might find it impossible to maintain a supply of coin for the payment of notes. The inconvenience of such a state of things need not be discussed, but I may add that its danger is enhanced by the fact that, pending the arrangements for the reconstruction of the Mint, it would not be justifiable to expend large sums on duplicates in anticipation of the failure of one portion or another of the existing machinery, the cost of replacing the fractured wheel in question having amounted to nearly 700*l.* In a new Mint, care would be taken, by means of double machinery, of which each part could be worked separately, to obviate the necessity of a complete cessation of coinage at any time, but, so long as the Department is maintained on its present footing, the inconvenience and danger to which I have referred must continue to exist.

* Sixth Annual Report (1875), page 29.

41426. Wt. 16585.

Coinages executed during the year.

The coins struck during the year 1876 were of fourteen different denominations, viz.:—

Gold.—Sovereigns.
Half-sovereigns.
Silver.—Half-crowns.
Florins.
Shillings.
Sixpences.
Fourpences (Maundy money only).
Threepences.
Twopences (Maundy money only).
Pence (do.).
Bronze.—Pence.
Halfpence.
Farthings.

Malta.

Bronze.—One-third farthings.

The total number of pieces struck at the Mint was 11,239,050, as against 30,581,242 in 1875, and their value, real or nominal, 4,945,747*l.* 17*s.* 11*d.** These figures do not include the bronze coinage executed by contract.

The total number of British coins struck during the year, including those struck by contract, was 30,036,410, and their value as follows:—

	£	s.	d.	£	s.	d.
Gold:						
Sovereigns	3,318,866	0	0			
Half-sovereigns	1,392,593	10	0			
				4,711,459	10	0
Silver:						
Half-crowns	79,152	12	6			
Florins	58,003	8	0			
Shillings	52,874	7	0			
Sixpences	21,035	17	6			
Fourpences (Maundy)	81	0	8			
Threepences	22,985	19	3			
Twopences (Maundy)	55	9	2			
Pence (do.)	43	8	10			
				234,232	2	11
Bronze:						
Pence	46,144	0	0			
Halfpence	14,186	13	4			
Farthings	1,120	0	0			
				61,450	13	4
Making a total of				5,007,142	6	3

* For detailed statement, see Appendix, page 37.

The above figures show that the amount of gold coined during the year, 4,700,000*l.*, has not been far short of the annual average, which may be taken to be 5,000,000*l.* The gold coinage continued without interruption from the 2nd of January to the 28th of June, except during the time devoted, as usual, to stocktaking at the close of the financial year, and a period of four weeks in the month of May, when it was found necessary to resume the coinage of silver. The supply of gold coin which the Mint was thus able to furnish to the Bank of England was sufficient, with the consignments of sovereigns received from Australia, to meet the requirements of the public during the enforced suspension of the coinage operations, and at the close of the year there was no immediate prospect of a further demand. The sovereigns from the Sydney and Melbourne Mints received by the Bank of England during the year amounted to 2,075,000*l.*, as against 2,726,000*l.* in 1875, and 1,972,000*l.* in the previous year. Gold coinage.

The amount of light gold coin withdrawn from circulation and imported into the Mint for re-coinage during the year was only 638,575*l.*, as against 2,129,000*l.* in 1875, and 950,000*l.* in the previous year. I have again to report that the Bank of England continue to be the only importers. Importation of light gold coin for re-coinage.

The coinage of silver, which only occupied the period of four weeks in May already mentioned, and the few working days remaining after the 7th of December, when the operations of the coinage were resumed, was necessarily far inferior in amount to that of previous years. The coin struck, as shown above, amounted to 234,232*l.*, while the sum issued was only 210,645*l.*, but, small as were these issues, the stock in the hands of the Mint to meet the home and colonial demand was almost entirely exhausted before the coinage could be resumed, and towards the close of the year, when the demand for silver coin is always heavy, some inconvenience resulted from the want of certain denominations of coin. Since the 1st of January the demand has fortunately decreased, and the stock in hand has been replenished. Silver coinage.

Of the silver coin issued during the year, 87,300*l.* was sent to the Bank of England, 20,000*l.* to the Bank of Ireland, and 75,375*l.* to the Colonies, in addition to 11,050*l.* shipped for the use of Treasury chests abroad, and 16,525*l.* in threepences delivered direct to private applicants. The demand for the latter coin, to the extraordinary increase of which I called attention in my Report for 1874,* has not been maintained, the amount issued having declined from 38,825*l.* in 1875, to 29,050*l.* in 1876. With reference to this decrease, it should be stated that during the greater part of the year applicants for amounts under 100*l.* in threepences have been referred to one of the principal banks, which had reported that it held a large surplus of coin of that denomination.

* Fifth Annual Report (1874), page 5.

The half-crowns issued during the year, 52,800*l.*, bring the total amount issued since May 1874, when the coinage of these pieces was resumed, to 451,200*l.*

England.

The following table, in continuation of that given in my last Report,* shows the amounts of silver coin issued by the Mint to the Bank of England, and by the Bank to the public, during the last ten years:—

Year.	Received by the Bank from the Mint.	Issued by the Bank to the Public.	Received by the Bank from the Public.	Worn Coin withdrawn from Circulation.
	£	£	£	£
1867	87,000	—	17,000	60,000
1868	175,000	193,000	—	75,000
1869	30,000	228,000	—	105,000
1870	188,000	328,000	—	80,000
1871	566,000	650,000	—	75,000
1872	972,000	910,000	—	65,000
1873	578,000	595,000	—	95,000
1874	500,000	432,000	—	115,000
1875	481,000	433,000	—	143,000
1876	87,000	57,000	—	275,000

The great decrease shown in the amount of silver coin sent by the Mint to the Bank of England is due to the comparatively insignificant amount of the silver coinage executed during the year, and the decrease in the issue by the Bank to the public to a decided falling off in the home demand. It will be seen that the Bank has availed itself of this opportunity to withdraw from circulation a much larger amount of worn coin than had been withdrawn in former years.

Scotland and Ireland.

I also append a statement, in continuation of that given in my Report for 1875,† showing the amounts of silver coin supplied by the Mint to Banks in Scotland and to the Bank of Ireland, and the amounts of worn coin withdrawn from circulation in those parts of the United Kingdom respectively, during the years 1872 to 1876 inclusive:—

Year.	New Coin issued.		Worn Coin withdrawn from Circulation.	
	To Scotch Banks.	To Bank of Ireland.	In Scotland.	In Ireland.
	£	£	£	£
1872	180,000	Nil.	26,510	15,000
1873	154,000	2,000	73,263	Nil.
1874	Nil.	5,000	25,900	10,400
1875	67,550	50,000	11,000	Nil.
1876	Nil.	20,000	Nil.	Nil.

* Sixth Annual Report (1875), page 5.
† Sixth Annual Report (1875), page 5.

It will be seen that no demand for new silver coin was made from Scotland, and that no worn coin was returned either from Scotland or Ireland during the year. The new coin transmitted to Ireland only amounted to 20,000*l.*, and indeed, owing to the inability of the Mint to coin, any large demand could not have been met; but it is to be regretted that full advantage should not be taken of the facilities afforded for the renewal of the silver coinage in districts which are at a distance from London, and not easily reached by the ordinary issues from the Bank of England.

The amounts of silver coin sent to, and withdrawn from circulation in, Colonies during the year were as follows: Colonies.

SILVER COIN TRANSMITTED TO COLONIES.

	£	s.	d.
New South Wales	20,000	0	0
West Indian Colonies	20,200	0	0
Victoria	800	0	0
Natal	100	0	0
Cape of Good Hope	25	0	0
New Zealand	950	0	0
Queensland	20,000	0	0
South Australia	12,000	0	0
Falkland Islands	1,000	0	0
West Africa	300	0	0
	£75,375	0	0

WORN SILVER COIN WITHDRAWN FROM COLONIES.

	£	s.	d.
New South Wales	875	0	0
Malta	1,000	0	0
	£1,875	0	0

It will be seen that the amount of new coin sent to Colonies during the year differed but slightly from the amount sent in 1875, which was 69,250*l.*, and that the withdrawals were inconsiderable. It may be assumed, therefore, as suggested in my last Report,* that the objects of the regulations of 1871, under which arrangements were made for the renewal of the silver coinage in the Colonies, have been in a great measure accomplished, but there are some Colonies from which no worn coin has as yet been received, and which may still avail themselves of the facilities offered to them for its withdrawal.

No silver bullion having been purchased for coinage during the year, it follows that no seignorage has accrued, and the usual statement therefore of the profit on the silver coinage of the year

* Sixth Annual Report (1875) page 7.

as calculated upon the average price of bullion and the rate, 5*s.* 6*d.* per ounce, at which silver coin is issued by the Mint, finds no place in this Report. I may mention, however, that if it had been necessary to purchase bullion, the profit on its coinage would have been at a much higher rate than in 1875, the average price of silver having been 4*s.* 5*d.* per ounce, as against 4*s.* 8$\frac{7}{8}$*d.* in that year.

I append* the usual Return showing the sums advanced to the Master of the Mint from the Consolidated Fund for the purchase of bullion for coinage, and the amounts repaid by the Mint to the Exchequer, during the year. From this Return it appears that the sum advanced was 325,000*l.*, which was applied to the withdrawal of worn silver coin to the amount, as already shown,† of 275,000*l.*; to the payments for the metal used in the manufacture of bronze coin by contract; and to the purchase of old copper coin from the Colonies. The balance due to the Exchequer on the 31st of December was the same amount, viz., 325,000*l.*, which was represented by cash in the Bank of England; by silver bars uncoined in consequence of the long suspension of the coinage; by the silver coin and bronze bars and coin in stock; and by a small amount of old copper coin still remaining unused.

Bronze coinage.

As already stated, no imperial bronze coinage was executed by the Mint during the year. The coinage of 100 tons of bronze coin, mentioned in my last Report‡ as having been in progress at Birmingham at the close of 1875, was completed during the early part of last year, but in the month of May, the Mint being fully engaged with the gold and silver coinages, it was found necessary to request their Lordships' authority for the issue of tenders for a further supply of 75 tons of pence and halfpence by contract. The tender of Messrs. Ralph Heaton and Sons was again accepted, and their contract was completed in September last. I append a statement of the amount and denominations of the coins struck during the year under each of these contracts:—

First Contract. (Balance.)	Tons.	Second Contract.	Tons.
Pence	43	Pence	60
Halfpence	23	Halfpence	15
Farthings	3		
	69		75

No farthings were ordered under the second contract, the supply of those coins in stock being sufficient to meet all probable demands for some time to come.

* Appendix, page 50.
† Page 6.
‡ Sixth Annual Report (1875), page 8.

The amount of bronze coin issued during the year was 49,575*l.*, as against 70,595*l.* in 1875, and 62,110*l.* in 1874, and cannot be considered excessive. It is slightly larger, however, than the issues either of 1873 or 1872, which were 43,745*l.* and 48,800*l.* respectively. The diminution in the amount issued is to be accounted for by the suspension for three months and a half, between August and December, of the issue of pence and halfpence in the metropolitan district, and by the decrease in the demand for the Colonies and Treasury chests abroad from 9,560*l.* in 1875 to 3,710*l.* in 1876. My Report for 1873* stated that from 1868 to the beginning of 1874 the issue of pence and halfpence had been suspended in London and its neighbourhood owing to the accumulation of large quantities of those coins in the hands of brewing firms, and the sufficiency of the coin already in circulation to meet the wants of the public. In 1874, however, it became necessary that the issue should be resumed, and it has been continued since that time, with hardly any intermission, until August last, when the amounts in the hands of brewers began again to accumulate. As it was evident that for the time no fresh issue was required, applicants resident in the London district, instead of being supplied with new coin, were referred to the holders of coin already issued, and the amounts accumulated were again put into circulation. The falling off in the amount of bronze coin sent to the Colonies during the year is partly to be attributed to the fact that no shipment was made to New Zealand on account of the sum of 6,000*l.* for which application was made by the Government of that Colony in 1875, but of which 3,000*l.* only was required in that year.

Withdrawal of old copper coin from circulation in the Colonies.

The withdrawals of old copper coin from the Colonies during the year have been insignificant, having only amounted to 1,979*l.*, as against 12,087*l.* in 1875, and 22,134*l.* in the previous year, and it may be presumed, therefore, that by far the greater part of the old coin has now been withdrawn from circulation. The steps to be taken for decrying the old coin, and the period within which it should be received by the Mint at its full nominal value, have for some time been the subject of correspondence between the Treasury and the Secretary of State for the Colonies, and on the 24th of March 1876 an Order in Council was passed extending to Colonial Possessions the Proclamation of the 13th of May 1869, by which the coin was finally declared to be no longer current in the United Kingdom. Their Lordships were pleased to fix the 31st of December 1877 as the limit of time for its reception by this Department, and on the 10th of April a circular despatch was addressed by the Secretary of State to Colonial Governments, apprising them of the arrangements which had been made. Copies of this despatch and of the Order in Council of the 24th of March will be found in the Appendix.†

All transactions connected with the exchange of old copper coin in the United Kingdom were brought to a close in 1873,

* Fourth Annual Report (1873), page 10.
† Appendix, page 56.

and it is probable, therefore, that at the end of the present year its circulation will almost entirely have ceased throughout the empire.

I append,* as usual, a Return showing the amount and denominations of the bronze coinage issued during the past year, and giving information as to the issue of bronze and the withdrawal of old copper coin from 1860 to the present time.

Coinage of one-third farthings for Malta.

On the 20th of June a consignment of old copper coin from Malta, of the nominal value of 256*l.* 5*s.*, was received by the Mint from the Crown Agents for the Colonies, who requested that in exchange for a portion of it, bronze coin of the value of 200*l.* might be issued, and that in payment for the remainder, 56*l.* 5*s.*, pieces of the nominal value of one-third of a farthing, which are legally current in the Island, might be coined and supplied to them. This coinage, consisting of 162,000 pieces, was executed [illegible] of July.

Colonial coinages.

With the exception just mentioned, no coinage could be [illegible] Mint for the Colonies during the year. The [illegible] pieces, however, were executed by Messrs. [illegible] of Birmingham, under the supervision of the Deputy Master, as follows:—

	Nominal value of Coinage.	Denomination of Pieces.
	Dollars.	
Silver.—Hong Kong -	96,000	Fifty-cent. Ten-cent. Five-cent.
Newfoundland -	26,000	Fifty-cent. Twenty-cent. Ten-cent. Five-cent.
Straits Settlements -	20,000	Twenty-cent. Ten-cent. Five-cent.
Bronze.—Hong Kong -	10,000	Cent.
Newfoundland -	2,000	Cent.
Canada - -	40,000	Cent.

Applications were also made during the year by the States of Jersey and the Government of Mauritius for new coinages. In the case of Jersey it was the desire of the States to withdraw the existing bronze coinage, of which two issues, of the nominal value of 1,000*l.* each, were made by the Mint so lately as in 1870 and 1871, but in which the old system of reckoning the penny as one-thirteenth part of the shilling had been maintained, and to substitute for it a coinage identical in weight and composition with the imperial bronze coins and of the same nominal value, but of a separate design. The issue of the new coinage having been authorised by Order in Council, steps were taken for the

* Appendix, page 54.

preparation of dies of the design proposed by the States, namely, for the obverse the same effigy of the Queen as had hitherto been used, and for the reverse a shield bearing the arms of the Island, with the words "States of Jersey," "one twelfth (or one twenty-fourth, or one forty-eighth) of a shilling," and the date of issue; and a coinage of the nominal value of 2,000*l.* in pence, halfpence, and farthings has been completed by Messrs. Heaton and Sons since the close of the year.

In the case of Mauritius, new subsidiary coinages of silver and bronze became necessary in consequence of the constitution of the rupee of India as the standard of value in the Island by Order in Council of the 12th of August 1876, of which a copy is appended to this Report.* The 8th clause of the draft Proclamation annexed to the Order provides for the issue of "such silver, copper, or bronze tokens as may from time to time be specified by the Governor of the Colony by proclamation, acting under the authority of the Secretary of State;" and in accordance with this provision the Governor applied successively in August and November last for the issue of silver and bronze token coinages, subsidiary to the rupee, for circulation in the Island and its dependencies. The silver tokens were required to be of the nominal value of 10 and 20 cents, and of these an issue of 10,000*l.* was requested. The bronze tokens applied for were of the nominal value of five cents, two cents, and one cent, and it was requested that Rs. 7,000 might be supplied of each denomination. Their Lordships having desired me to place myself in communication with the Crown Agents for the Colonies, designs for all five coins were submitted for Her Majesty's approval, and, with their Lordships' sanction, arrangements were made respecting their weight and composition. I proposed that, as in the coinages of Hong Kong and the Straits Settlements, subsidiary to the dollar, coins representing 20 and 10 cents should be issued of the same weight as the fifth and tenth part of the rupee respectively, but that, whereas the rupee contains 916·6 parts of fine silver per thousand, the subsidiary coins should be made tokens by reducing the amount of silver contained in them to 800 parts of fine silver per thousand, so that, the rupee containing 165 grains of fine silver, the twenty-cent and ten-cent piece should only contain 28·80 and 14·40 grains of fine silver respectively. The weight of the bronze coins was fixed as follows: for the five-cent piece 180 grains, for the two-cent 60 grains, and for the one-cent 30 grains; and for both coinages the design adopted was, for the obverse, the effigy of Her Majesty already in use for the Straits Settlements coinage, with the words "Victoria Queen," and for the reverse the word "Mauritius," with the date of the year and the value of each coin expressed in letters and numerals. The necessary dies having been prepared, the coinages were entrusted to Messrs.

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* Appendix, page 58.

Ralph Heaton and Sons, and have both been completed and shipped to the Colony since the close of the year.

Coinage Returns.

I append, as usual, a Return* showing the amount of coinage executed during the last ten years, and the other Returns and Accounts relating to the work of the year 1876.

The General Account,† which gives on one side the total cost of the Mint, and on the other the receipts payable to the Exchequer during the year, shows that, for the first time since the adoption of this form of account in 1872, the expenses of the Department have exceeded its receipts. As I have explained in former Reports, the profit of the State from the coinage depends almost entirely on the amount of silver and bronze bullion which may be converted into coin, as it is from the issue of these token coinages, at a rate above the intrinsic value of the metal, that the only gain on the ordinary operations of minting can be derived. In 1872 the excess of receipts over expenditure was 98,314*l.*; in 1873, 40,565*l.*; in 1874, 26,435*l.*; and in 1875, 75,802*l.* In 1876, however, during which, as already shown, no silver bullion was bought for coinage, one of the principal sources of profit was wanting, and the receipts were left to depend almost entirely upon the amount of bronze coined. The result is a net loss on the transactions of the year of 24,719*l.*, which is entirely attributable to the necessity for suspending the coinage for the long period mentioned above.

Estimates.

It will be evident that, so long as it is necessary to make arrangements for the execution of a part of the coinage by contract, the sum voted by Parliament for the expenses of the Mint during the year is likely to prove insufficient. This has been the case in the year 1876–77, and a further deficiency has been caused by the loss on worn silver coin sent in for re-coinage, the withdrawals of which, by the Bank of England have, as already shown,‡ been very large during the past year. These deficiencies have been made good by a Supplementary Vote of 8,700*l.* under the sub-heads "Incidental Coinage Expenses" and "Loss on worn silver coin withdrawn from circulation." The estimate for the year 1877–78 differs but very slightly from that of the previous year, as originally presented to Parliament, being 50,200*l.*, as against 50,250*l.* in 1876–77. The alteration is due to an increase under the sub-head "Salaries, Allowances, and Wages" of 150*l.*, consequent upon the annual increments accruing on certain salaries, and the discontinuance of the sub-head "Packing specie for Treasury chests," under which 200*l.* has been voted for some years, arrangements having been sanctioned by their Lordships by which charges usually paid under that sub-head will be treated as advances, and repaid to the Mint by the Treasury.

Establishment.

On the 25th of May their Lordships were pleased to authorise the conversion of three Writerships in the Mint into "Clerkships

* Appendix, page 51.
† Page 47.
‡ Page 6.

of the Lower Division," under the Order in Council of the 12th of February 1876. One of these appointments has been filled up by the promotion, under the 12th clause of the Order, of a Writer already employed in the Operative Department, and another by open competition, while the duties of the third continue to be performed by a Writer whose service does not qualify him for advancement to the permanent establishment.

Mint Office.

The consignments of coin packed during the year for transmission to the Colonies in aid of Treasury chests were of the total nominal value of 234,129*l.*, as against 284,807*l.* in 1875, and consisted of 185,000*l.* in British gold coin, 11,050*l.* in British silver coin, and 38,089*l.* in Mexican dollars sent to Hong Kong and the Straits Settlements. The value of the dollars shipped in 1875 was 209,757*l.*, as against 316,451*l.* in 1874, and 89,000*l.* and 126,000*l.* in the two previous years, and it will be seen, therefore, that the amount of these coins, which it has been found expedient to purchase in this country and forward to the East, has of late years varied considerably.

Visitors.

Owing to the suspension of the coinage from the 21st of July to the 7th of December, the visitors to the Mint during the year were far less numerous than in 1875. The number of orders of admission issued was 1,100, and the number of visitors 4,524.

Operative Department.

The annual Memorandum of the Superintendent of the Operative Department is appended, as usual, to this Report.*

Owing to the suspension of the coinage for nearly five months, the staff engaged in the actual manufacture of coin was not fully occupied, but it will be seen that, in consequence of the demand for gold coin during the first six months of the year, the quantity of gold melted far exceeded that of 1875. The silver melted, on the other hand, only amounted to 63¼ tons, as against 156½ tons in the previous year, and the amount of bronze melted was insignificant. A considerable part of Mr. Hill's Memorandum is naturally devoted to a detailed description of the accident, already referred to,† by which the works of the Mint were stopped for so long a period, and of the steps taken for replacing the "first-motion" wheel which had been broken, and for putting the machinery generally into as efficient a state as possible. I need not here enter into the particulars of the repairs effected, but it is my duty again to point out that, although every precaution has

* Appendix, p. 38.
† Page 3.

been taken to secure the Mint from another break-down such as occurred last year, the fact remains that a large part of the machinery is of obsolete and inconvenient construction, and quite inadequate to meet the normal demand for coin, and that its general condition and arrangements are such that it is impossible altogether to provide against the occurrence of accidents which may again render necessary a prolonged suspension of the operations of the coinage, and give occasion to various complaints.

Careful experiments, the results of which are given in detail by Mr. Hill, have been made during the year to test the relative merits of the old screw coining-presses which were erected in 1810 and have been in use ever since, and a lever press of modern construction, manufactured by Messrs. Ralph Heaton and Sons, of Birmingham, on the principle of the German presses by Uhlhorn, which was purchased by the Mint in 1875, and to which reference was made in my Report for that year.* The superiority of the lever press, as regards economy and accuracy in working and freedom from noise, has now been abundantly proved, and it is very desirable that the Mint should be placed in a position finally to discard such antiquated machines for striking coin as those upon which it is still obliged almost entirely to depend.

In the month of November I received an intimation from the Admiralty that Her Majesty had been pleased to award a medal to the officers and men composing the late Arctic expedition, including those of the yacht "Pandora," and requesting me to take steps for preparing the necessary dies and striking the medals. The shape of the medals awarded for former expeditions was octagonal, and the design of the reverse represented a sailing vessel of the class hitherto employed in Polar navigation, embedded in ice. It was decided that the new medal should be circular, and that the reverse should accurately represent one of the two ships of the last expedition as she appeared in winter quarters, and a very careful design was prepared by Mr. Leonard Wyon, engraver of the Mint, from a photograph taken on the spot. The effigy of Her Majesty selected for the obverse was a reduction by Mr. George G. Adams from the medal designed by him for the India Office, and presented to native princes on the occasion of the proclamation of Her Majesty as Empress of India on the 1st of January last. The Arctic medals have been completed and distributed since the close of the year.

Scientific arrangements.

I append† the usual Memorandum of the Chemist of the Mint, showing the nature of the duties which have devolved upon his Department during the past year.

The number of assays made in connection with the verification of the composition of bars prepared for coinage and of finished

* Sixth Annual Report (1875), page 28.

† Appendix, page 39.

coins has exceeded 12,000, as against 7,900 in 1875. In this number are included assays of coins from the Australian and Indian Mints, and from the Japanese Mint, and of a few silver "ticals" sent to this country for examination by the Government of Siam. The results are given in Mr. Roberts' Memorandum, and show that the coins issued from the Branch Mints at Sydney and Melbourne continue to be of remarkable accuracy.

The value of the gold and silver coinages examined at the annual trial of the Pyx for the year 1876, which was held at Goldsmiths' Hall on the 5th of July, was 4,300,000*l.* and 490,000*l.* respectively. Slight changes in the details of manipulation, described by Mr. Roberts, were carried into effect at this trial, the result of which proved that the fineness of the gold coins, when tested in bulk, was precisely standard. Four gold coins only were taken for separate examination, and of these, as will be seen from the verdict of the jury, which I append,* two were close to standard, and the remainder were found to contain only three ten-thousand parts less than the exact amount of precious metal prescribed by law. The average fineness of the five silver coins examined was 924·98, the standard being 925.

The only important research to which the attention of the Chemist of the Mint has been specially directed during the year, refers to the density of the gold-copper alloy. From the earliest times it has occurred to investigators to deduce the composition of metals and their alloys from determinations of their specific gravity. Several years ago experiments were made in the Mint with the view of ascertaining whether it might be possible to establish a relation between the composition of gold-copper alloys and their densities; and these experiments have lately been resumed in consequence of observations by Dr. O. J. Broch, Professor of Mathematics at Christiania. The details are of much interest, and it would doubtless be of great advantage to possess a method which would render it possible to ascertain the composition of large masses of coins without destroying their integrity.

I regret to be again unable to submit a statement of the waste either on the gold or silver coinage, although a large amount of "sweep" from both coinages has been sold during the year, and it was hoped that an opportunity might have been found before its close of completing the coinage of one or both metals, and of ascertaining the final loss in each case. The circumstances of the year, however, as has been shown, have been very peculiar, inasmuch as during the first six months the demand for gold and silver coin was such as to render it necessary to melt or coin one or other metal without intermission, and the work could on no account be suspended to admit of a final adjustment of accounts, and in the month of July, when a silver coinage was in progress, and the coinage of gold was only temporarily put aside, the machinery failed, and all coinage operations were neces-

* Appendix, page 54.

sarily suspended until within a few weeks of the close of the year, up to which time the amount of "sweep" which had accumulated was not sufficient for sale by tender.

The proposed removal of the Mint to a site at the Savoy, to which reference was made in my last Report,* having been objected to by the inhabitants of the Strand and its neighbourhood, on the ground that noxious fumes might be generated in the operations of the coinage, it is right that attention should be called to the report of Mr. F. J. Bramwell, F.R.S., the eminent engineer, who was called upon to pronounce authoritatively upon the nature of the works carried on in a Mint, and whether they could in any way be a source of injury or annoyance to the surrounding district. Mr. Bramwell's report, which is printed in the Appendix,† proves conclusively that not the slightest objection can on such grounds be maintained to the erection of a Mint on any site, and it must now be evident that apprehensions on this point are entirely without foundation. Mr. T. W. Keates, Consulting Chemist of the Metropolitan Board of Works, who inspected the Mint by direction of the Board, reported in a similar sense.

The officer of Engineers mentioned in my Report for last year,‡ as having entered upon a course of instruction in assaying arranged by the Chemist of the Mint, has passed the examination entitling him to a certificate in a highly satisfactory manner; and I should mention that certain Indian officers have also been allowed to attend the Laboratory with a view of qualifying themselves for assayerships in the Indian Mints.

Sydney Mint.

The Report of the Deputy Master of the Sydney Mint for the year 1876 will be found in the Appendix.§

The amount of coinage executed by that branch of the Mint during the year was less by nearly half a million than the coinage of 1875, mainly in consequence, as Mr. Elouis explains, of the diminished productiveness of the gold fields of New South Wales in the earlier part of the year, and a corresponding reduction in the amount of gold sent to Sydney for conversion into coin. The withdrawals of worn silver coin in the Colony by means of the Sydney Mint have been considerable, the amount actually withdrawn from circulation during the year having been 4,643*l.*, as against 5,245*l.* in 1875. I should explain, in reference to my statement above,‖ showing that the value of the withdrawals of worn coin from New South Wales was only 875*l.*, that a large part of the bullion produced by melting the coin into bar having, for the reasons given by Mr. Elouis, been retained longer than

* Sixth Annual Report (1875) page 25.
† Appendix, page 55.
‡ Sixth Annual Report (1875) page 13.
§ Appendix, page 60.
‖ Page 7.

usual at Sydney, the transactions connected with its sale were not concluded before the close of the year, and that the full amount in question, therefore, does not appear in the accounts of the Mint in this country for 1876. Bronze coin of the nominal value of 1,045*l.* was issued by the Sydney Mint during the year, and it may be considered, therefore, that full advantage is taken in New South Wales of the existence of a branch Mint to provide for the renewal of the token coinages in the Colony. Mr. Elouis further reports the improvements which have been effected in the Sydney Mint during the year by the renewal of the boilers and repairs of machinery, and the details of the arrangement by which, with their Lordships' sanction, the salaries and position of the Foremen of the different Departments have been raised, and the prospects of the subordinate establishment proportionately improved.

Melbourne Mint.

I append* the Annual Report of the proceedings of the Melbourne Mint during the year, drawn up by Mr. Robert Hunt, Superintendent of the Bullion Office, who was appointed, with their Lordships' sanction, to act as Deputy Master of that branch of the Mint for the period of Colonel Ward's leave of absence, commencing in June last.

Notwithstanding a decrease in the amount of gold produced in Victoria during the year, the coinage of the Melbourne Mint has exceeded that of 1875 by more than a quarter of a million, and, as the issues of the latter year showed an increase over those of 1874 of 515,000*l.*, Mr. Hunt is doubtless justified in stating that the advantages of sending in gold for coinage are gradually becoming more appreciated in the Colony. Of the amount coined, 2,124,000*l.*, nearly three-fourths, or 1,587,104*l.*, was exported.

In May last Colonel Ward reported that, in the absence of any advantageous market in Victoria for the disposal of the silver extracted from gold at the Melbourne Mint, it had lately been the practice to ship it to London for sale on account of the Department, and he requested that the Master of the Mint would consider whether, in order to save the incidental expenses of melting, assaying, brokerage, &c., which would be incurred by shipping the silver to a London house, he would be willing to purchase such amounts as might be consigned to him at the market rate ruling at the time of its receipt, the quantity to be forwarded being estimated at about 30,000 or 40,000 ounces per annum. After personally conferring with Colonel Ward on his arrival in this country, I replied that there would be no objection to the transmission of the silver in question to the Mint in half-yearly consignments, and that it could be purchased at the market price of the day on which it was delivered, free of all charges, at the Mint, subject to the report of the Assayer of the Mint to

* Appendix, page 63.

whom bullion purchased for coinage is in all cases submitted. I also authorised the Deputy Master, as proposed by Colonel Ward, to draw upon the Master of the Mint at seven days' sight for a sum within the amount likely to be realised by the sale of the silver, and I undertook that the balance of the total amount due should be paid to the Oriental Bank Corporation in London to the credit of the "Mint Bullion Account" with the branch Bank at Melbourne. Under this arrangement one consignment of silver bullion has been received and purchased for coinage since the close of the year.

It is to be regretted that, as stated by Mr. Hunt, although a considerable proportion of the silver coinage in Victoria is unfit for use as a circulating medium, no worn coin should have been sent in for withdrawal to the Melbourne Mint during the year. The Government of Victoria, as remarked in my last Report,* was one of the first Colonial Governments to accept the favourable conditions offered by their Lordships, in the regulations of 1871, for renewing the silver coinage in Colonies, and a sum of £2,000*l.* in worn coin was withdrawn from circulation in 1872† through the Melbourne Mint, the Colonial Treasurer having made arrangements by which new coin could be obtained in exchange for it, but no similar arrangements have been made in subsequent years.

Depreciation of silver.

I referred briefly in my last Report‡ to the remarkable fall which had taken place during the year 1875 in the price of silver, pointing out that, so far as the coinage of this country was concerned, its only effect had been to increase the difference between the nominal and metallic value of the silver coin, and to that extent to add to the profit which the State derives from the issue of that part of its token coinage. In the month of July last, the Select Committee appointed by the House of Commons "to consider and report upon the causes of the depreciation of "silver, and the effects of such depreciation upon the exchange "between India and England," presented a Report,§ in which the subject is exhaustively dealt with, and which incidentally contains much valuable information as to the extent to which the depreciation of silver has affected, or is likely to affect, the coinages of different countries. The Committee reported that the fall in the price of silver had been conclusively shown by the evidence taken to be due (1) to the discovery of new silver mines of great richness in the state of Nevada; (2) to the introduction of a gold currency into Germany in place of the previous silver currency (the causes to which I ventured to point in my last Report); and (3) to the decreased demand for silver for

* Sixth Annual Report (1875), page 18.
† See Third Annual Report (1872), page 20.
‡ Sixth Annual Report (1875), page 18.
§ No. 338 (Session 1876).

export to India; and they added that the adoption of the single gold standard by the Scandinavian kingdoms,* and the suspension of the unrestricted coinage of silver in the countries of the "Latin" Union and Holland, had combined with the causes first mentioned to affect both the supply and demand, and had made a serious fall in the price of silver inevitable.

I have already mentioned† that the average price of silver bullion in the London market during the year 1876 was 4*s.* 5*d.* per ounce, and I now append a table, showing the average price for each month of the year:—

Month. (1876.)	Average price per ounce of standard silver in the London market.
	d.
January	$55\frac{7}{16}$
February	$54\frac{7}{16}$
March	$53\frac{1}{4}$
April	$53\frac{5}{8}$
May	$52\frac{3}{4}$
June	$51\frac{1}{2}$
July	$48\frac{5}{8}$
August	$51\frac{15}{16}$
September	$51\frac{5}{8}$
October	$52\frac{5}{8}$
November	$54\frac{1}{8}$
December	$56\frac{1}{2}$

It will be seen from these figures that the average for the twelve months was as nearly as possible 53*d.*, and that, while the price gradually fell till the month of July, touching the lowest point ever known, 3*s.* $10\frac{3}{4}$*d.*, it gradually rose again till December, when it reached a point rather higher than that at which it had stood at the beginning of the year. In 1877 the price for the first four months of the year has been:—

Month. (1877.)	Average price.
	d.
January	$58\frac{1}{4}$
February	$56\frac{3}{4}$
March	$54\frac{3}{4}$
April	$54\frac{1}{8}$

showing that there has again been a downward tendency in the market.

Portraiture on coin.

It must be evident, even to those who have not made a special study of the subject, that the design of modern coins is in almost all respects decidedly inferior to that of coinages in former times, although the latter were equally well suited for the purposes of circulation. In no respect has this inferiority been more apparent than in the manner in which the important question of portraiture has from time to time been treated; and I propose, without

* See Fourth Annual Report (1873), page 27.
† Page 8.

attempting to exhaust all the authorities on the subject, to make a few observations on what would appear to be some of the more interesting facts connected with the portrait coins of this and other countries, in the hope that they may be of service, if only by directing attention to a subject which, I venture to think, has not of late years received the consideration it deserves.

I do not propose to refer to Greek or Roman coins, which, though in many cases of extreme interest and beauty,* were in such high relief as to be unfit for the purposes of modern circulation. In Saxon times, too, many coins bear evidence of the influence of Roman art, the prevailing type of the effigies, however, until nearly the end of the fifteenth century, being that of the penny of William the Conqueror, shown in the annexed woodcut, although a gradual advance can be traced in their execution.† Martin Folkes observes that during the period from William I. to Henry VII. "there does not appear "to have been so much as an attempt to preserve "any similitude of the several kings in the "impressions of their heads. They are all alike," he continues, "and even those that are represented on their broad seals and "monuments as wearing beards, do, nevertheless, appear smooth-"faced upon their coins, and, although Henry VI. became king "when only nine months old, and reigned above eight and thirty "years, yet can no difference be observed in his countenance "by which his first moneys and his last may be distinguished "from each other." On the other hand, of Henry VII. he points out that "this king did, about the eighteenth or nineteenth year "of his reign, make a great alteration in the form of his coin, "upon which his head was now represented in profile, and with "a good resemblance of his other pictures."‡ The fact here stated, it may be observed, is curious, inasmuch as good portraits are extant of earlier kings, such as those of Edward III. preserved in illuminated MSS. at Windsor, and that of Richard II. in Westminster Abbey; nor had the art of working in metal been at a low ebb, for in the middle of the fifteenth century William Austen, the first eminent English founder and the contemporary of Donatello and Ghiberti, produced excellent works, pronounced by Flaxman to be worthy even of those artists.§ It is strange,

(From Ruding's plates.)

* Patin, in his "Histoire des Médailles," says, "N'a-t'on pas de la satisfaction "des idées que nous donnent les véritables portraits de tant d'illustres princesses "Romaines? L'adresse de Julie, femme d'Auguste, la douceur de l'impératrice "Plotine, l'humeur enjouée de Faustine, &c." . . . . (Paris, 1695.)

† "The first Frank and Gothic princes struck their money upon the Roman "models, and some of our earlier Saxon princes did the same thing; they had so "much taste as to be pleased with improvements which they had not the skill to "preserve. . . . . The people sank by degrees into a state of incredible "barbarity in these respects, from which they never attempted to emerge, till the "European princes, by their Eastern expeditions, had acquired something of a better "taste, and the arts began to revive."—Clarke on Coins (1767), page 435.

‡ "Tables of English silver and gold coins" (1763), pages 9 and 16.

§ Horace Walpole's "Anecdotes of Painting," (Wornum's Edition, 1849,) vol. I., page 39.

therefore, that up to the time of Henry VII. coins should have so inadequately represented the art of the period, but there can be no doubt that, as above stated, the effigy on the shilling of that king, No. 1 in the annexed plate, resembles his portrait in the print from the picture of his marriage, by Mabuse, of which there is a copy in the British Museum.*

The full-face effigy is again to be found in many of the coins of Henry VIII. The portraits on these coins are excellent, and it may safely be inferred that the genius of Holbein was not without influence on the coinage of this reign, so closely do the likenesses resemble the portraits of the king by that master, one of the best of which is probably to be found in the well-known picture representing the grant of a charter to the Barber-Surgeons. An example is given in the plate (No. 2). Edward VI. is represented on his coins in profile, as well as full-faced. It is asserted by Walpole that "Holbein was still alive, and drew the young "king several times after he came to the crown;" but this cannot have been the case if, as is now generally admitted, Holbein died in 1543. The coins are, however, of great merit, as may be seen by the pattern half-sovereign (No. 3) in the plate.

In the coin selected to represent the reign of Mary (No. 4), the effigies of the queen and her consort Philip of Spain are placed face to face, probably in imitation of coins of Ferdinand and Isabella. The likeness of the queen on this coin bears a close resemblance to the portrait on the medal by Trezzo given in my Annual Report for 1874,† and to the fine portrait belonging to the Society of Antiquaries.

The coins of Elizabeth are distinctly inferior to those of the two preceding reigns, both in portraiture and execution, notwithstanding that considerable pains appear to have been taken to secure a good likeness of the queen. A proclamation was prepared in 1563, to the effect that "hitherto none hath sufficiently ex-"pressed the natural representation of Her Majestie's person, "favor, or grace," and declaring that "a special coning payntor" should be appointed, whose works might serve as a model for other artists.‡ Zuccaro is believed to have been accordingly appointed court painter, and the portrait by him of "Queen "Elizabeth in a fancy dress," now at Hampton Court Palace, bears a resemblance to the effigy on some of the coins issued. It should be remarked that advantage does not appear to have been taken of the best art of the period, as a beautiful cameo portrait of the queen exists at the South Kensington Museum (No. 1603), attributed to Valerio Belli, called by Walpole Valerio Vincentino. No. 5 represents the obverse of a "quarter-pound" of this reign. I also give (No. 6), a jeton of Mary Queen of Scots, which is interesting from the well-authenticated fact that Acheson, the engraver, visited Paris in 1553 for the purpose of

* Evelyn says that it is easy to see "in Henry VII., painted by Holbein, a close, "dry, wise, and careful effigies; as in that of his predecessor, Richard III., a "twisted face, and not a line but what bespeaks hypocrisy, craft, and cruelty."—A Discourse on Medals (London, 1697), page 340.

† Fifth Annual Report (1874), page 18.

‡ "Archæologia," vol. II., page 169.

obtaining a faithful likeness of the queen,* and it is probable that the die for this jeton was engraved from the portrait thus taken.

As regards the earlier coins of James I. the following record has been preserved: "January 1581. Item to my Lord Seytonis "painter for certane pictures of his Maiesteis visage drawin be "him and gevin to the sinkare to be gravin in the new cunyie."† And Rymer mentions a grant in 1617 to Nicolas Hillyard, who is described as "our principall Drawer for the small portraits and "Imbosser of our Medallies of gold." The portraits on the coins of this reign, of which the shilling No. 7 in the plate, is a good specimen, are very like existing prints in the British Museum.

Vandyck's portraits have made the face of King Charles I. so familiar, that there is no difficulty in judging of the correctness of his effigy on the coinage. The designs were principally the work of Nicholas Briot and Thomas Rawlins, of whom the former was afterwards appointed General of the Mint in Scotland, and, as Charles Dickeson, the engraver of the Scottish Mint, had "not beene in use to grave his Majesties face," was commissioned to engrave the dies, being "best experienced with such livelie impressions."‡ The coin No. 8 is a "unit" from the hand of this artist.

The works of Thomas Simon, pupil of Nicholas Briot, and engraver of the Mint in the reign of Charles II., are without question the best specimens of the art ever produced by an Englishman.§ The example given (No. 9) of the coins of this reign is the famous "petition crown," on the edge of which is set forth Simon's prayer to the king to compare it, his trial-piece, with the work of his Dutch rival Roettier. The effigy closely resembles that on his ordinary crown-piece, which was from a picture by Cooper, whom Evelyn calls "ye rare limner."‖ It is thought that Simon secretly engraved the dies for Blondeau,¶ the inventor of important changes adopted about this time in the mechanical operations of coinage. Pepys, it may be mentioned, bears testimony to the accuracy of the portraits on coins of this reign, which he states were "very neat, and like the King."

The likenesses on the coins of James II. and William and Mary (Nos. 10 and 11) are evidently good, but do not call for any special remark, except that they were the work of the skilful family of Roettier, whose names are so constantly found in the Mint records of these reigns.

In the reign of Queen Anne, whose portraits on the coinage

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* "Records of the Coinage of Scotland," by R. W. Cochran-Patrick (1876), vol. II., description of plate VI.

† Ibid., vol. I., page 248.

‡ Ibid., vol. I., page clxxx.

§ Evelyn mentions a medal, by Simon, of the Protector Cromwell, "from a picture of Walker's most resembling him," of which he observes, speaking of course with bias, that "in his ambiguous and double face" may be read, "without other "comment, characters of the greatest dissimulation, boldness, cruelty, ambition, "in every touch and stroak."—A Discourse of Medals (London 1697), page 339.

‖ Ruding's Annals of the Coinage, vol. II., page 338.

¶ "Medals, Coins, &c. of Thomas Simon," by George Vertue (2nd edit., 1780), page 19.

have much merit, the designs were by Croker, whom Pinkerton considers to rank as an engraver "next to Simon."* The specimen given in the Plate (No. 12) is a two-guinea piece. Croker continued to be Engraver of the Mint from the time of his appointment by Queen Anne until his death in 1740, when he was succeeded by Dassier. The coins of George I. and George II., a guinea and a two-guinea piece, given in the Plate (Nos. 13 and 14), are, perhaps, the best examples of the coinages of these reigns.

The earlier years of the reign of George III. show a marked falling off in art as applied to coinage, nor was any improvement in design attempted until towards the close of the eighteenth century, when the Committee of the Privy Council on Coinage wrote to the Royal Academy requesting that body to "select such "a committee as might be best furnished with that peculiar "information which would best enable their Lordships to improve "and perfect the coinage of this country as a becoming work "of taste and art." No important result, however, appears to have followed this step, though James Barry, the well-known Academician, offered to Lord Liverpool certain suggestions of his own for the improvement of the coinage.† The coin shown in the Plate (No. 15) is a guinea by Pingo, Engraver of the Mint, the effigy on which is very like the bust of George III., by Nollekens, in the possession of the Royal Society. In the year 1816, on the passing of the Act demonetising silver and constituting gold coin the sole standard of value, it became necessary that designs should be prepared for the new coins to be issued. The designs for the sovereign, issued for the first time in the following year, 1817, were entrusted to Pistrucci, afterwards Chief Medallist of the Mint, and the obverse was executed by him in jasper. The original of the latter is in the Museum of the Mint. Excellent as were the works of this great artist, it would not appear that, so far as portraiture was concerned, his coins were always successful, as Ruding remarks that "the "want of resemblance to our venerable monarch" in this design "could not escape the most cursory inspection." The first sovereign of George IV., of which an example is given in the Plate (No. 16), was also designed by Pistrucci in 1821, but was superseded in 1823 by another, the die for which was engraved by William Wyon, R.A., from a bas-relief by Chantrey, and which, both as a work of art and as a portrait, is worthy of his reputation. The excellent effigy on the sovereign of William IV., No. 17 in the plate, is also by Wyon from a bas-relief by Chantrey; and that of Her present Majesty, No. 18, which still remains in use, was modelled from life by the same artist at the beginning of the reign.

* "An Essay on Medals," (1808), vol. II., page 184.

† Part of his letter may be worth quoting, as showing that in his opinion portraiture on coin was worthy of the attention of the greatest artists. He says, "Many men may be very excellent painters . . . . who never could have had "any occasion to furnish themselves with information respecting the taste of coins "and other matters of antiquity, which many of them, ridiculously following the "foolish part of the example of a great man, Rembrandt, despise and reprobate as "contemptible niceties, below the notice of the imitators of nature."—Works of James Barry, R.A., (London, 1809,) vol. II., page 611.

As it appeared desirable to compare the above selected specimens of British coins with the best examples of other, and especially earlier, schools, I have added to the plate a few coins of the fifteenth, sixteenth, and seventeenth centuries. It would be impossible within the limits of this Report to give any detailed description of these coins with a view of showing how far they may be considered trustworthy as regards portraiture, but it is interesting to compare the records thus left of the persons represented on them with the knowledge of their general character derived from history. The first point to be remarked is the eminence of those who during this period devoted their attention to designs for coins, and who, far from considering such work beneath their notice, were content to sign themselves indifferently "aurifex" or "pictor." Thus Francia, the greatest painter of the earlier Bolognese school, two of whose coins are given in the plate* (Nos. 19 and 20) was, at the time of his death in 1517, Master of the Mint at Bologna. The first of these coins, however, which bears the effigy of Giovanni Bentivoglio, Lord of Bologna, is rather suggestive of the style of Masaccio's paintings than those of Francia. The second (No. 20) is a beautiful work, in low relief, representing Pope Julius the Second, and bears some resemblance to the portrait of that Pontiff by Raphael in the National Gallery, with which, however, it can hardly be compared, as the face is bearded and the position of the head is very different. Raphael, it should be remarked, also designed medals, if not coins. The coins of Clement the Seventh are remarkable as having been mainly the work of Benvenuto Cellini,† who appears himself to have drawn the designs for the coins which he engraved.‡ The coin of this Pope, by Cellini, No. 21 in the plate, well represents the Florentine school. Of all the magnificent series of pontifical coins and medals, however, perhaps none were better than the coins of Innocent the Twelfth, whose name is familiar to English readers from Mr. Browning's poem, "The Ring and the Book." These coins were the work of Ferdinand Saint Urbain and Hameranus, and one by the former artist is given (No. 22) in the plate. The works of both are described at some length by Venuti, who states that Saint Urbain began, although he did not complete, a medallic history of the popes.§ I regret that space has not permitted me to give an example of the works of Saint Urbain's contemporary, J. C. Hedlinger, the eminent engraver whose coins of Charles XII. and succeeding Swedish monarchs have a justly high reputation. His medals will be found finely engraved in a work by Chrétien de Méchel.‖ The school of Mantua is represented by a coin (No. 25) of Francesco Maria Gonzaga, Duke of Mantua from

* Bolzenthal's "Skizzen zur Kunstgeschichte der modernen Medallen-Arbeit," page 84.

† "Il Fiorino d'oro," page 265. (Firenze, 1738.)

‡ "Life of Benvenuto Cellini," translated by Nagent, page 32.

§ "Romanorum Pontificum historiam numismatibus incisam aggressus est; sed .. " .....nequaquam absolvit."—Venuti's Numismata Romanorum Pontificum (Rome, 1744), page xxx.

‖ Œuvres du Chevalier Hedlinger. (Basle, 1776.)

1484 to 1519, whose coinage was worthy of a period famous for the works of Mantegna, himself a sculptor and engraver as well as a painter, and in the service of the reigning family. These coins are figured and described by Argelati in his well-known work on Italian coinage.* Two fine examples of the school of Milan are given in the coins Nos. 23 and 24, of which the first bears the portrait of Giovanni Galeazzo Maria Sforza, Duke of Milan at the end of the fifteenth century, and the second that of his uncle and successor, Lodovico Moro.† No. 26 represents Louis XII., King of France and Duke of Milan, whose coins are supposed to have been designed by Leonardo da Vinci.‡ The names which I have mentioned by no means exhaust the list of painters who made a study of designing coins and medals, which might have included Pisani, Michael Angelo,§ and other famous artists.

The French school is represented by coins of Francis I., Charles IX., and Henry IV., Nos. 28, 29, and 30, and that of Germany by a fine coin (No. 27), bearing the effigies of Maximilian I., Charles V., and Ferdinand, Emperors, and Kings of Spain.‖ The last coin on the plate (No. 31) is of the reign of Charles V., and appears to have been struck for the coronation of the Emperor at Bologna in 1530.¶

The series of coins to which attention has thus been directed, show how much care and artistic skill have in former times been bestowed upon designs for coinage. The difference between the portraiture on ancient Greek coins and those of Italy will be understood by a comparison of the coin of Philistis figured in my Annual Report for 1874** and the Italian coins given in this plate††. In Italy, it cannot be doubted that the art of engraving to a certain extent still maintains its excellence. In France, designs of great merit for medals and coins are annually exhibited in the Salon, and art literature has been enriched by the publication, under Government authority, of the "Trésor de Numismatique," elaborately illustrated, and containing the finest known examples of coins and medals. In England, it is to be regretted that far too little attention is devoted to the systematic training of engravers, and that the greatest painters of the day have not, as was the case in Italy, made a study also of engraving. Although the present century has produced a few engravers of eminence, it cannot be

* Tractatus de Monetis Italiæ, 5th part, page 16 (Milan, 1759).

† Ibid., page 69. "Il Fiorino d'oro," page 261 (Firenze, 1738).

‡ "Art applied to Industry," by W. Burges (1865), page 68.

§ Vita di M. Augelo Buonarroti, da Aurelio Gotti, vol. I., page 121. Vasari mentions steel dies cut by Leone Leoni and other artists. "Lives of the Painters," (Bohn's edition), vol. V., pp. 429–433.

‖ This coin is figured in the "Catalogue des Monnoies en Argent du Cabinet "Impérial," (Vienne, 1769), and in the "Beschreibung der Böhmischen Münzen," (Prag, 1774).

¶ This coin is described by Argelati as "moneta fatta gettare dall' Imperatore "Carlo V. quando fece il solenne suo ingresso in Bologna." Tractatus de Monetis Italiæ, 5th part, page 75. (Milan, 1759.)

** Fifth Annual Report (1874), page 17.

†† This difference has been well indicated by Mr. Ruskin, who says: "A Greek "never expresses momentary passion: a Florentine looks to momentary passion as "the ultimate object of his skill."—Aratra Pentelici, page 187. (London 1872).

said that any school of engraving, properly so called, has been founded in this country, and it therefore gives me much satisfaction to append* an extract from a letter from Mr. E. J. Poynter, R.A., Director of the Art School at South Kensington, which shows that he is fully aware of the want which exists, and will direct the attention of rising artists to the claims of this branch of art.

It only remains for me to express my thanks to the officers of the Department of Coins and Medals in the British Museum for the assistance which they have been so good as to render me in the selection of the coins photographed in the plate, and to mention that I have been materially aided by Mr. Roberts, Chemist of the Mint, in collecting facts connected with the application of art to coinage, a subject in which he takes great interest.

Coinage of foreign countries.

United States.

I mentioned in my last Report† that the American Legislature had passed a bill in April 1876, providing for the issue of subsidiary silver coin in exchange for the fractional currency. The Report of the Director of the United States Mint for the fiscal year ended the 30th June 1876, contains details as to the arrangements made for giving effect as speedily as possible to the provisions of this law, and shows that since the beginning of August last the coinage of silver has been vigorously pressed forward at the three Mints at which coinage is executed, namely, Philadelphia, San Francisco, and Carson. In the year ended the 30th of June the amount both of the gold and silver coinage had exceeded those of the previous year by $4,600,000 and $9,000,000 respectively, and during the six months ended the 31st of December last, the coinage executed amounted to $27,500,000 in gold and $10,600,000 in silver, exclusive of trade dollars. If therefore, as is anticipated, an equal rate of coinage is maintained during the remaining six months of the fiscal year 1876-7, the total coinage of the year will not be less than 11,000,000*l.* in gold and 4,240,000*l.* in silver.

The Director's Report further contains a detailed "review of "the several propositions for the coinage of legal tender silver "dollars under a double standard, &c." The Coinage Act of 1873, Dr. Linderman remarks, repealed what may properly be termed the remnant of the silver standard left by the demonetizing legislation of 1853, and he proceeds to urge that by an adherence to the single gold standard, with a convertible paper currency and a sufficient supply of silver coin for change and small payments, the difficulties and disadvantages which always attend complex standards would be avoided. "Such a safe and simple system," he adds, "may within a reasonable period of time "be fully attained, and when once in successful operation would "no doubt so commend itself to the favour of the public as to "hereafter render the discussion of the subject unnecessary, and

* Appendix, page 67.

† Sixth Annual Report (1875), page 20.

" exempt the country from the evils which, as a rule, attend and " follow legislative propositions for changing monetary laws." A bill has, however, been passed by the House of Representatives again making the old silver dollar legal tender to an unlimited amount, and at the date of this Report it remains to be seen whether the Senate will concur in taking a step which will reverse the decision arrived at so lately as in 1873, or whether the question will be allowed to stand over until public opinion upon it becomes more definitely pronounced. I may mention that the present aspect of the subject of monetary standards, and the course which should be followed at this juncture by the American Legislature, are ably discussed by M. de Parieu, the eminent French advocate of the gold standard, in a letter addressed in February last to Mr. Washburne, United States Minister in Paris.

I referred last year* to a resolution which had been presented to the United States Senate, affirming the expediency of a convention with the United Kingdom for the establishment of a common unit of value between the two countries, by which the gold dollar should be made the standard, and all accounts should be kept in dollars and cents, and I pointed out some of the objections which might be offered to the proposal. The resolution was passed by the Senate, but failed to be considered by the House of Representatives, and it would seem improbable that it will be discussed by the latter body until the question raised as to the revival of the silver standard has been finally settled.

Germany.

Considerable progress has been made during the year 1876 towards the completion of the arrangements for the introduction of the mark currency throughout the German Empire. I referred in my last Report† to the law passed in January 1876 for reducing the whole of the old silver coins still circulating in Germany from standard coins to tokens, by giving the Federal Council power to declare that the pieces of the thaler coinage, which, under the Coinage Law of 1873, retained the position of Imperial monies and were legal tender to any amount, should, like the subsidiary coinage, be legal tender only to the amount of 20 marks, at the rate of three marks per thaler. This power was exercised in November last so far as concerned the two-thaler and ⅓-thaler pieces, which were declared uncurrent after the 15th of February 1877, and large amounts of thaler and two-thaler pieces have been withdrawn from circulation. The task, therefore, of demonetising and withdrawing the old silver coinages has been much simplified, but the most important step, namely, the demonetisation and withdrawal of the thalers, of which a large number are still in circulation, remains to be taken.‡ In the latter part of last year a resolution was passed by the Bundesrath for increasing the limit of the silver token coinage to 15 marks per head of the population of the Empire, on the plea that the requirements of the country

* Sixth Annual Report (1875), page 20.
† Sixth Annual Report (1875), page 22.
‡ See " Economist," 16th December 1876.

exceeded the sum of 10 marks per head, as was provided by the Coinage Law of 1873. To this measure objections appear to have been raised, on somewhat inadequate grounds, by the more uncompromising adherents of the single gold standard in Germany, and, owing to the strong feeling in the Reichsrath against it, the Imperial Government decided not to submit it to that body. It was calculated that, had it become law, silver of the value of 10,000,000*l.* would have been absorbed in excess of the amount originally contemplated, and a corresponding decrease have taken place in the amount to be eventually disposed of by the German Government.* In order further to dispose of the silver withdrawn from circulation in Germany, a scheme has also been suggested for the coinage of a new trade-dollar (*handelspiaster*)† for use in China and the neighbouring commercial districts. In connexion with this suggestion it may be mentioned that during the past year there has been a largely increased coinage at the Vienna Mint of Maria Theresa dollars, which are issued solely for circulation in the Levant.

The total amount of new coinage struck by the German Mints to the beginning of February 1877 has been officially stated to be—

	£
Gold - - -	71,760,000
Silver - - -	19,159,000
Nickel - - -	1,758,000
Copper - - -	471,000

and since the beginning of the present year the coinage of gold, which had been for some time suspended in order that the silver coinage might be more rapidly proceeded with, has been resumed with activity.

France, Belgium, Italy, Switzerland, and Greece.

No change of importance has taken place during the year 1876 in the coinage arrangements of the countries forming the so-called Latin Union, in which the coinage of silver has, since the year 1873, been restricted within very narrow limits, while that of gold has been subject to no restrictions. The decisions of the Conferences held in Paris in 1874, 1875, and 1876, and regulating the coinage of silver five-franc pieces, which are the only standard silver coins, have been recorded in former Reports. As stated in my last Report,‡ the issue for 1876 was limited to 120,000,000 francs, or 4,800,000*l.*, for all the countries of the Union, and even of this amount the sum of 7,200,000 francs allotted to Switzerland was not coined. In that country, the opinion of the Federal Council being in favour of the adoption of the single gold standard, no steps have been taken, either in 1875 or 1876, for striking the amount of standard silver coin to which it was entitled under the Conventions of those years. In France the Legislature adopted the Bill proposed by the Minister of Finance, giving the Government power to limit or suspend the coinage of silver five-franc pieces, with the addition of a proviso, recommended by the Commission of the

* See "Economist," 14th October and 11th November 1876.
† See "Economist," 2nd December 1876.
‡ Sixth Annual Report (1875), page 23.

Senate to which the Bill had been referred, to the effect that this law should only remain in force until the 31st of December 1878. The Bill was passed in opposition to a more stringent measure proposed in the Senate by M. de Parieu, and mentioned in my last Report,* which would have entirely forbidden the coinage of silver on account of private individuals, and would have restricted the right of coining the 54,000,000 francs allotted to France by the Convention to the Government only. It is interesting to note, as showing the extent to which the coinage of gold has of late years been resumed in France, that, whereas in 1872 and 1873 no gold coins were struck, and in 1874 the amount coined was only 24,300,000 francs, the coinage of 1875 and 1876 together amounted to 411,400,000 francs, or nearly 16,500,000*l.*†

In Belgium a Bill was passed under which the law of December 1873 authorising the Government to limit or suspend the coinage of silver five-franc pieces, which was renewed in 1875 but would have expired at the end of 1876, will remain in force until the 1st of January 1879. The "Exposé des Motifs," by M. Malou, Finance Minister in Belgium, prefixed to this Bill, sets forth in detail the course taken by the Governments of all the countries of the Monetary Union respecting the coinage of silver since the first adoption of restrictive measures.‡

According to the terms of the declaration made at the Conference held in 1876, another meeting of Representatives of the contracting Powers was to have been held in January 1877, but, by agreement between the Governments at the close of last year, the next Conference was postponed until the month of November. The result is that the coinage of five-franc pieces in silver in the countries of the Union for the year 1877 remains limited by another article of that declaration, which provides that, until after the further meeting contemplated, "bons de monnaie" (Mint warrants for the delivery of coin) for 1877 shall only be issued for sums not exceeding half the amounts allotted by the declaration to each country, and the following, therefore, are the limits fixed for the coinage of five-franc pieces during the current year:—

	Francs.		£
France - - -	27,000,000	or	1,080,000
Italy - - -	18,000,000	„	720,000
Belgium - -	5,400,000	„	216,000
Switzerland - -	3,600,000	„	144,000
Greece - - -	§1,800,000	„	72,000
	55,800,000	„	2,232,000

In Greece, which did not enter the Union until 1868, it had been originally intended that the monetary system of the Union should be brought into operation on the 1st of January 1876, but

* Sixth Annual Report (1875), page 23.

† Bulletin de Statistique (Ministère des Finances), Paris, Janvier 1877, page 46.

‡ "Documents Monétaires," 2me Série, 11me Fascicule, page 27.

§ The normal sum to be allotted to Greece was fixed at 3,600,000 francs, although in 1876, in view of the peculiar circumstances of that country, an additional issue of 8,400,000 francs was accorded to it.

the Hellenic Government found it necessary to postpone the final adoption of the new currency until the 1st of August last, when the coins, which had been struck in France, were to be put into circulation, as had already been done in the case of the subsidiary coinage.

Austria and Spain.

In reference to the efforts made to establish international exchangeability of coins, even though precisely identical monetary units may be, at least for the present, unattainable, it is interesting to remark that an agreement exists between France and Austro-Hungary for the mutual admission into circulation of gold coins of either country at the rate of 4 florins to 10 francs.

A step in the same direction has been taken by Spain in the abandonment of the use of the old monetary unit, the *real de vellon*, and the definitive adoption of the peseta, or equivalent of the franc. A recent decree, in the Madrid Gazette, orders the coinage of a gold piece of the value of 25 francs,* and although it is not understood that the Spanish Government has as yet effected an agreement with the countries of the "Latin" Monetary Union for the reciprocal interchangeability of the new piece, an arrangement to that effect will doubtless be carried out.

Holland.

The monetary question in the Netherlands received great attention during the year 1876, but had not at the close of the year been finally settled. As shown in my Report for 1875,† a law was passed in the month of June of that year for provisionally regulating the Dutch coinage, and in 1876 bills were presented by the Government for establishing a complete system of coinage, both in Holland and its Asiatic and American dependencies, but all these measures were rejected by the States General, or withdrawn from their consideration.

In the month of May a bill was laid before the Second Chamber, with an exhaustive explanatory note by the Minister of Finance,‡ providing for the introduction of the single gold standard, and authorising the coinage of (1) standard gold pieces of 10 and 5 florins, (2) silver token coins of the nominal value of 2 florins and 1 florin, 945 thousandths fine, and of 25, 10, and 5 cent pieces, 720 thousandths fine, and (3) bronze token coins in $2\frac{1}{2}$, 1 cent, and $\frac{1}{2}$ cent pieces. In the month of June a bill was presented for settling the coinage of the Dutch East Indian colonies, which proposed to establish the so-called "étalon boiteux," that is to say, the retention of the standard silver coins, but with an absolute prohibition of further coinage, and the legalisation of standard gold coins of the mother country, the coinage of which is unrestricted. In September two further propositions were submitted to the Legislature for regulating the monetary system of the American colonies of Surinam and Curaçao, which is at present identical with that of the mother country. The bill relating to the Netherlands coinage encoun-

* This coin is identical with the piece recommended by Mr. Frederick Hendriks to the French Monetary Commission of 1870 as the best type for a future international sovereign.—Enquête sur la Question Monétaire, vol. I. page 210. (Paris, 1872.)

† Sixth Annual Report (1875), page 23.

‡ "Documents Monétaires" of Belgium, 2me Série, 11me Fascicule, page 40.

tered so much opposition in the sections of the Second Chamber, that the Government decided to change its provisions considerably. Instead of the single gold standard the modified proposal introduced the "étalon boiteux," under which the standard silver coins were retained, but not only was any fresh issue of that coinage prohibited, but the Government was permitted to demonetize a part of it already in circulation, and sell it in the form of ingots. The standard gold coins, already authorised by the law of the 6th of June 1875, were retained, and copper pieces were replaced by bronze. In this form the bill was accepted by the Second Chamber on the 24th of November, but was rejected in the following month by the First Chamber. The bill affecting the coinage of the Asiatic colonies was also rejected by the First Chamber in December, and the two measures respecting Surinam and Curaçao had already been withdrawn by the Government.

As the law of 1875 was provisional, only remaining in force until the 1st of January 1877, another law was passed on the 30th of December, continuing the existing arrangements, and providing that the monetary question should be again considered before the 1st of January 1878. So far as 1877 is concerned, therefore, the double standard still prevails in Holland, with the important reservation that the coinage of silver is entirely prohibited, while that of gold is unlimited. Since the beginning of the year the coinage of gold 10-florin pieces has been in rapid progress, and bills have been presented to the Second Chamber for replacing copper by bronze coins, and for regulating the coinage of the Dutch East Indies.

In 1876 the issues of coin from the Mint at Utrecht were considerable, namely:—

	Denomination.	No. of Pieces.
Gold.—	Ten-florin pieces	1,581,106
	Ducats (5·75 florins)	44,408
Silver (subsidiary coinage).—	Ten-cents	1,000,000
	Five-cents	200,000
Copper— (do.),	Cents	13,047,000
	Half-cents	2,020,000
	Total	17,892,514

Denmark.

I have received from Mr. C. A. Svendsen, Master of the Mint at Copenhagen, a copy of a Report* to the Ministry of Finance, dated the 30th of November 1876, which contains full details of the steps taken for carrying out the reform of the currency inaugurated by the treaty entered into in 1873 between Denmark and Sweden.† The Report deals with the transactions of the Mint during the whole period, from August 1873 to the 30th of November 1876, over which these operations have extended, and shows that the cost of introducing the gold standard and of a complete re-coinage of the pieces in circulation has been rather more than

* Beretning fra Möntdirektören om den i Finantsaaret, 1876–77.

† See Fourth Annual Report (1873), page 27.

2,000,000 kronen, or 113,000*l.* The total value of the gold coin struck has been nearly 1,500,000*l.*, in pieces of 20 and 10 kronen, that of silver coin nearly 1,000,000*l.*, in pieces of 2 kronen and 1 krone, and 25 and 10 öre; and that of bronze 25,000*l.*, in pieces of 5, 2, and 1 öre.

Norway.

During the year 1876 the Government of Norway, which had refused in 1873 to be a party to the treaty above mentioned, by which it was proposed that the three Scandinavian nations should enter into an international monetary convention, has finally adopted the system of coinage then agreed upon. The new arrangements came into operation in Norway on the 1st of April 1876, and it was agreed that from the date of the ratification of the supplementary convention no pieces of the old currency should be coined in that country, and that the new money of account should be introduced on the 1st of January 1877.

Japan Mint.

The Report of the Commissioner of the Imperial Mint at Osaka for the year ending the 30th of June last contains the usual details of the work performed during the year, and shows that the total number of coins struck was no less than 108,891,000, of which only 76,000 were gold coins and 21,148,000 silver, the remainder, 87,667,000, being copper coins of four different denominations. It is a remarkable fact, of which no explanation is given in the Report, that the number of trade dollars coined in the year was only 124,000.

The assays of the Japanese coins examined by this Department in November last by direction of their Lordships, fully confirmed the reports of the assayer at Osaka, and testified to the accuracy with which the fineness both of the gold and silver coinage in Japan is maintained.

Reconstruction of Mint buildings, and renewal of machinery.

Since the abandonment of the proposal to remove the Mint to a site at the Savoy, to which reference was made in my last Report,* the question of the measures to be adopted for placing the Department on a proper footing has remained undecided. I have reason to know, however, that the subject has not ceased to receive the attention of the First Commissioners of Works, or that of their Lordships; and although, as shown in this and former Reports, the resources of the Mint are still quite inadequate to meet the demands upon it, there is ground for hoping that the recent break-down, by affording an opportunity of strengthening those parts of the machinery which are most likely to fail, may prove the means, so far at least as the immediate future is concerned, of averting the recurrence of accidents which would seriously interrupt the operations of the coinage.

I have the honour to be,
Sir,
Your obedient Servant,
C. W. FREMANTLE,
Deputy Master of the Mint.

The Secretary,
Treasury.

Royal Mint, 16*th May* 1877.

* Sixth Annual Report (1875), page 25.

APPENDIX.

No. I.

Memorandum by Mr. Hill, Superintendent of the Operative Department.

Melting House.

The work in the Melting Department has been of a lighter character than that of any year since 1869. The gold coinage, which commenced on the 3rd of January, was continued (with the exception of the month of May) until the end of June, when it became necessary to suspend it, in order that the Mint might meet a demand which had arisen for silver.

The amount of gold melted during the year was 3,972,466 ounces, equal to about 121½ tons, as against 873,239 ounces, or 26¾ tons, in 1875.

In my Memorandum for 1875 I alluded to the re-appearance of brittleness in gold imported for coinage, no less than 35,482 ounces having been rejected during the year. Of this weight more than 30,000 ounces have since been remelted and passed into work, without resorting to the use of the chlorine process. The method adopted was to add a very few ounces of the brittle bars to each pot, and remelt them with the scissel and rejected coin which had been returned to the Melting House; and the bars thus produced were in every case perfectly sound, and free from brittleness.

The weight of silver melted was considerably under the average, only 2,068,036 ounces, or about 63¼ tons, having been cast into bars for the various denominations of coin.

The amount of bronze melted was only 12 tons, consisting of scissel; and six tons of copper were granulated for use as alloy metal.

Coining Department.

Through an accident to the "first-motion" wheel of the 40 horse-power engine, the work in this Department had to be suspended for a period of about four months and a half, notwithstanding which, it will be seen that the gold coinage reached 4,711,459*l.*, or within 300,000*l.* of the yearly average. The silver coined, on the other hand, only amounted to 234,232*l.* 2*s.* 11*d.*, which is the smallest amount of silver coin struck in any year since 1869. The silver coinage was in progress when the above-mentioned accident occurred. The only bronze coinage executed during the year was of the value of 56*l.* 5*s.* in one-third farthings, for circulation in Malta.

The work in the Adjusting and Cutting Room has been most satis-

factorily performed, as is shown by the fact that the weight of the silver coinage of the year, the value of which exceeded a quarter of a million sterling, was within 0·77 of an ounce of the actual standard prescribed by the Coinage Act of 1870. When it is considered that the greater portion of this coinage was executed without the aid of the draw-bench, these results must be taken to show a high degree of accuracy.

A new cutting-out machine, manufactured by Messrs. Ralph Heaton and Sons, of Birmingham, was erected during the year.

The Uhlhorn lever coining-press mentioned in my last Memorandum has been kept in constant work, and has given the most satisfactory results. During the year this press has been striking half-crowns, the largest coin now issued by the Mint, and also the silver Maundy pence, hitherto coined by manual labour, which are the smallest coins issued. I subjoin a statement comparing the working of this press with that of the old screw-presses still in use, for a period of 68 days, during which all the presses were engaged in striking the same denominations of coin. This table shows the averages, both as regards the number of pieces coined per pair of dies used, and the number of brockages, or defectively coined pieces, to be greatly in favour of the lever-press. It frequently occurs indeed that this press is worked for many days in succession without producing a defective piece, and it would be very desirable that lever-presses only should be used in the Mint, as the saving of time and expense in dies alone renders their adoption an object of importance, without taking into account the extent to which they lessen the risk of defective pieces passing into circulation.

TABLE shewing the working of the screw coining-presses and of the lever coining-press, (manufactured after Uhlhorn's system by Messrs. Ralph Heaton and Sons, of Birmingham), for 68 days in 1876, during which all the presses were engaged in striking the same denominations of coin :—

Number of days worked.	Denomination of Coin.	Screw Coining-Presses.					Lever Coining-Press.				
		Number of pieces struck.	Number of Brockages.	Brockages per thousand.	Number of dies used.	Number of pieces struck per pair of dies.	Number of pieces struck.	Number of brockages.	Brockages per thousand.	Number of dies used.	Number of pieces struck per pair of dies.
20	Sovereigns -	1,219,608	11,088	9·10	Ob. Rev. 89+108	12,377	234,175	1,410	6·04	Ob. Rev. 8+10	10,010
14	Half-Sovereigns	1,628,897	27,745	26·97	100+55	15,245	132,769	402	3·03	11+5	10,295
7	Half-Crowns -	565,801	10,823	19·20	37+17	20,832	112,363	72	0·64	10+5	14,942
5	Florins - -	407,159	9,361	18·83	34+31	15,297	90,074	450	5·10	7+2	20,010
4	Shillings - -	355,659	4,787	13·48	9+9	39,451	77,813	235	3·02	1+2	51,875
3	Sixpences - -	463,161	8,004	12·99	8+4	77,027	82,715	2	0·02	1+1	82,715
14	Threepences -	1,421,650	27,749	19·52	153+27	15,509	375,683	53	0·14	7+2	75,017
68		5,547,796	97,557	17·58	485+281 (Average.)	16,030 (Average.)	1,104,089	2,679	2·39	45+28 (Average.)	30,274 (Average.)

I have again to mention the great difficulty which has been experienced of obtaining good steel for the manufacture of dies, large numbers of which it has been necessary to reject, either before they leave the Die Department, or before they are finally set in the coining-presses.

Machinery Department.

The work of the Artificers employed in this Department must necessarily be very heavy, owing to the imperfections of the machinery, which requires constant attention, and, at times, very extensive repairs. In my Memorandum for 1875 I drew attention to the bad state of the "first-motion" wheel of the 40 horse-power engine which drives the rolling mills. The repairs to this wheel, which has been in use since 1810, have for some time past been a constant source of anxiety and trouble, as, in consequence of the impossibility of stopping the coinages of gold and silver, it has frequently been necessary to replace at night the cogs which at the end of the day's work showed symptoms of weakness, in order that the rolling might be continued on the following morning. Arrangements had already been made to re-gear the wheel on the 1st of August with hornbeam, and the new cogs had been prepared and delivered to this Department, when, on the 21st of July, both the arms broke off close to the "boss" and the rim was completely shattered. A new wheel was immediately ordered of Messrs. J. & G. Rennie, to be made 12 feet in diameter, of cast-iron, in two parts bolted together, and to contain 150 teeth, each 12½ inches in breadth. It was intended that the teeth should have been, as usual, of hard wood, similar to those in the old wheel, but the extra strain upon the wheel, caused by the erection of the 40 horse-power engine in 1859, crushed and broke the wooden teeth, and eventually destroyed the wheel itself, and rendered it necessary to substitute a new one of much greater strength. From the existing arrangements of walls, masonry, brick-work, &c., it was found impossible to make the wheel much broader than the old one, and it was determined, therefore, to gain additional strength by making the teeth of the new wheel of gun-metal in lieu of wood. These gun-metal teeth, after having been cast, had all to be accurately fitted into the mortices prepared in the wheel to receive them, and when fitted, were accurately cut by machinery so as to make them work smoothly. Although this arrangement caused some delay in the manufacture of the wheel, it is now so substantial that it may be expected to last many years without causing any interruption of the work.

During the year the 40 horse-power engine has been taken to pieces and put into a thorough state of repair; the cylinders and springs were examined and cleaned; the slides planed and re-dressed; the beds refaced; and the surface-joints of the cylinders filed and re-dressed. The throttle-valve and stop-cock were re-adjusted, and the nozzles taken down and refaced; the air-pump was also examined and cleaned, and a new india-rubber valve fitted to the bucket. Besides this, the cold-water pump was repaired and cleaned, new blow-off pipes and steam-cocks were fitted to the slide-jacket, the parallel motion taken to pieces, examined and cleaned, and the cylinders and steam-pipes re-covered with felt.

The small donkey pumping-engine, which fills the boilers of the 40 horse-power engine and one of the water-tanks on top of the main building, was also taken to pieces and thoroughly repaired. The 20 horse-power engine was dismantled and thoroughly overhauled, the slide-jackets taken down, and the valves adjusted. The air-pump was examined, and a new india-rubber valve fitted. The blow-through pipes were entirely renewed, and a new gun-metal cock and forked lever of the governor fitted. The vacuum pump and the cold-water pump of the 16 horse-power engine were also taken to pieces, examined, and repaired where necessary.

The 6 horse-power engine was taken to pieces, thoroughly examined and cleaned, and the force-pump (which is attached to it as a duplicate to supply water to the tanks at the top of the main building), being on close examination found to be very defective, was entirely renewed, as were also the feed and other pipes in connexion with these tanks. The boilers have all been cleaned and repaired where necessary.

In addition to the above repairs to the engines and boilers, the slides, wheels, and bearings of the shafting of the pumps in connexion with the artesian well were examined, and the pump buckets taken out and refitted, and the machinery throughout the Coining Department was examined, cleaned, and repaired as far as was possible.

In the Rolling Room three pairs of rollers have been taken out and lapped, and new brasses have been fitted to the large plummer blocks of one of the intermediate wheels.

The whole of the coining-presses have been taken to pieces and put into efficient working order.

One of the grinding-mills used for crushing the cinders, crucibles, &c., had become so worn and unfit for use that it was found necessary, during the suspension of the coinage, to replace it with a new one of modern construction.

Besides the above repairs to the machinery, two dozen new steel cylinders for the draw-bench have been made; one new set of moulds for shilling bars have been prepared, and one old set altered for bars of the reduced thickness.

Die Department.

Although the work in the other branches of the Operative Department was suspended for a period of nearly five months, this Department was fully occupied during the whole of the year in making dies for stock, the number of which had been considerably reduced during the late coinages by the large consumption consequent upon the defective quality of the steel. The worn-out die-bolsters have been renewed throughout, and upwards of 3,340 matrices, punches, and dies for various denominations of coin have been prepared for use. Besides the above, the Department has furnished 27 war-medal punches and dies, a new obverse die for the Board of Trade medal for saving life at sea, and the usual dies for the Standards Department of the Board of Trade. It has also produced 11,000 medals for the army and navy, the usual medals for the University of London and the Royal Society, as well as 45 gold and silver medals to be given by the Foreign Office as rewards to seamen of other nations for saving the lives of British subjects.

I have again to report the successful working of the arrangements for mounting and finishing medals. The total number of clasps manufactured during the year was 1,289, and the number of bars 10,894. Besides the above work, 11,332 bars and 578 clasps were affixed to medals without damage to their surface, which cannot be said to have been the case when this part of the work was executed outside the Mint by contract.

I append the usual statement of the number of coins struck during the year 1876, and the number of dies used for the Imperial coinage during the years 1874, 1875, and 1876 respectively.

Robert A. Hill,
Superintendent of the Operative Department.

Royal Mint,
27th March 1877.

STATEMENT of the Number of Coins struck at the Royal Mint during the Year 1876.

Denomination.		Number.	Nominal Value.		
			£	s.	d.
IMPERIAL:—					
Gold:	Sovereigns	3,318,866	3,318,866	0	0
„	Half Sovereigns	2,785,187	1,392,593	10	0
Silver:	Half Crowns	633,221	79,152	12	6
„	Florins	580,034	58,003	8	0
„	Shillings	1,057,487	52,874	7	0
„	Sixpences	841,435	21,035	17	6
„	Fourpences (Maundy money only)	4,862	81	0	8
„	Threepences	1,838,877	22,985	19	3
„	Twopences (Maundy money only)	6,655	55	9	2
	Pence (Maundy money only)	10,426	43	8	10
MALTA:—					
Bronze:	One-third Farthings	162,000	56	5	0
		11,239,050	4,945,747	17	11

STATEMENT of the Number and Denominations of Pieces coined, with the Number of Dies used in their production, during the Years 1874, 1875, and 1876.

Denomination of Coin.	1874.			1875.			1876.		
	Number of Pieces coined.	Number of Dies used.	Number of Pieces struck per Pair of Dies.	Number of Pieces coined.	Number of Dies used.	Number of Pieces struck per Pair of Dies.	Number of Pieces coined.	Number of Dies used.	Number of Pieces struck per Pair of Dies.
Sovereigns	706,749	51 + 65	12,185	—	—	—	4,943,347	272 + 330	15,895
Half Sovereigns	3,115,463	349 + 83	14,730	956,136	118 + 41	12,026	5,483,826	476 + 143	17,718
Half Crowns	2,448,501	208 + 119	14,975	1,261,806	126 + 73	12,632	724,344	62 + 30	15,747
Florins	1,714,689	51 + 48	34,640	1,492,526	78 + 90	17,954	588,978	43 + 34	15,298
Shillings	6,086,571	111 + 67	68,385	4,745,683	120 + 67	50,756	1,397,542	42 + 37	35,381
Sixpences	4,965,149	137 + 59	50,664	4,183,176	125 + 69	43,126	1,916,957	38 + 20	35,067
Threepences	4,592,340	317 + 89	22,622	3,693,170	206 + 49	28,966	2,027,629	209 + 39	16,352
Maundy Fourpences	5,937	3 + 2	2,374	4,154	10 + 3	640	5,109	7 + 7	729
,, Threepences	4,400	2 + 2	2,200	4,231	2 + 4	1,410	5,466	4 + 5	1,215
,, Twopences	5,578	7 + 4	1,014	5,745	6 + 2	1,436	7,371	3 + 1	3,685
,, Pence	8,741	3 + 10	1,344	8,459	2 + 4	2,820	12,813	8 + 4	2,135
Pence	5,941,822	263 + 241	23,578	10,807,263	453 + 398	25,104	—	—	—
Halfpence	1,380,065	38 + 58	32,994	5,506,750	120 + 203	34,098	—	—	—
Farthings	—	—	—	752,450	39 + 21	35,082	—	—	—
	30,975,005	1,521 + 847 *2,368	26,162 (Average)	33,361,349	1,415 + 1,024 †2,439	27,356 (Average)	16,218,366	1,164 + 670 ‡1,834	17,681 (Average)

* Including 580 worn dies re-sunk, and again finished for coining.
† Including 696 worn dies re-sunk, and again finished for coining.
‡ Including 644 worn dies re-sunk, and again finished for coining.

No. II.

Memorandum by Mr. Roberts, F.R.S., Chemist of the Mint.

I append a statement of the number of assays made in the Office from the 1st of January to the 31st of December 1876:—

Gold.		
Assays of bars	7,062	
,, coin	1,741	
Check assays on fine gold	467	
		9,270
Silver.		
Assays of bars	1,947	
,, coin	605	
Check assays on fine silver	216	
		2,768
Total number of assays made during the year		12,038

The total number of assays made during the preceding year was 7,923.

Certain of the coins struck at Sydney and Melbourne have been assayed in my Office, and the results proved, as has always been the case, that the coins issued from these Mints approximate in a remarkable manner to the exact standard of fineness. The average composition of the Pyx coins of the Mints at Calcutta and Bombay, which were received from the India Office, was also found to be satisfactory.

The coins submitted to me from the Imperial Japanese Mint at Osaka well sustain the reputation of the officers who are responsible for their production, and show conclusively that the Japanese Government is as anxious as they have hitherto been to coin with accuracy. In accordance with the request of the Siamese Government, I have assayed samples of the coins manufactured in this country for circulation in Siam. The standard of these coins is 880; the average composition of the coins examined was found to be 882·3, but the working of such an alloy is attended with some difficulty, and the composition of individual pieces was therefore somewhat irregular.

Treatment of Sweep.

Advantage was taken of the cessation of the ordinary work of the Office, which followed the accident to the machinery in the Operative Department, to apply to sweep on a small scale some of the well-known methods for extracting the precious metals. The experiments were useful, but I am still satisfied that, as the amount of metal remaining in the residues is always ascertained by assay before the sweep is sold, and the prices it realises are satisfactory, it would not be possible to pursue a better course than that hitherto adopted, which was described in the Report for 1873.*

* Fourth Annual Report (1873), page 17.

Instruction in Assaying for Officers of the Royal Engineers.

Lieut.-Colonel Scratchley, who, as stated in my Memorandum for last year, entered upon a course of instruction, has passed an examination in the theory and practice of assaying, which was highly satisfactory. Two officers, Lieut. Martin and Dr. Edis, have also attended the Laboratory with the view of qualifying themselves for appointments as assayers in the Indian Mints.

Loan Collection of Scientific Apparatus.

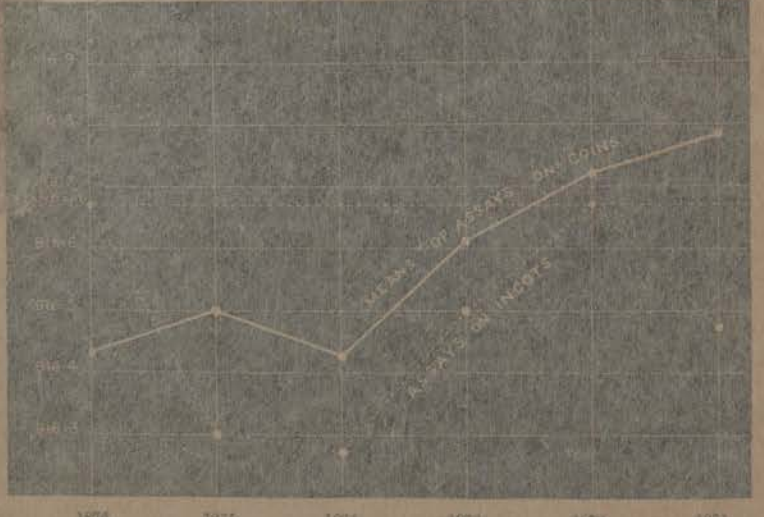
In accordance with the request of the Committee of Council on Education, such apparatus as was suitable for this Collection was sent to South Kensington in the early part of the year. The instruments which are not required for actual research have been allowed to remain there, pending the decision of the Government as to the formation of a permanent Museum.

As might have been anticipated, this valuable exhibition did not contain many appliances of special interest from a Mint point of view; for, as Professor Stanley Jevons observes, "It is a misfortune of what may "be called the science of monetary technology that its study is almost "of necessity confined to the few officers employed in Government "Mints, hence we can hardly expect the same advances to be made in "the production of money as in other branches of manufacture where "there is wide and free competition."

Trial of the Pyx.

I pointed out last year that the practice of melting coins into an ingot was liable to give inaccurate results. By a series of experiments, in which the conditions of the trial were closely imitated, I ascertained the probable amount of error, and showed by means of a curve, which I reproduce and extend this year, that the composition of the ingot was invariably lower than the mean of the assays on individual coins.

Diagram showing the results of Gold assays at Trials of the Pyx from 1871 to 1876.



Certain precautions which I suggested were observed at the Trial in July last, and it will be seen that in the year 1876 the point on the dotted line which represents the assay report on the ingot is higher than the point on the continuous line which represents the mean of the assays on individual coins, instead of being below, as has been the case since the year 1871, when such data were first introduced into the verdict. I would repeat that the question, though of some importance to the Department, is a comparatively insignificant one from the point of view of the public, as the mean of the assays on the ingot during the years 1871 to 1875 only exhibits a variation of $\frac{13}{1000}$ths, that is, $\frac{1.1}{100}$ths of the remedy allowed by law.

Reports as to the Innocuous Character of the Operations of Minting.

The public has from time to time expressed the mistaken view that fumes of a disagreeable character might escape from the Mint. Such fears, which could only have arisen from misapprehension as to the nature of the work conducted in a mint, have, it is to be hoped, been finally set at rest by Mr. Bramwell, F.R.S., the eminent engineer, and Mr. Keates, chemist to the Metropolitan Board of Works.

In accordance with my instructions, I submitted to these gentlemen certain facts as to the chemical operations incidental to coinage, and they were satisfied, after careful personal inspection, that the work of the Mint can in no way prove objectionable to the neighbourhood in which it is situated; for, in the words of Mr. Bramwell's report, which was published in the daily journals in March, "acid fumes there would "be none, and there would not be so much smoke emitted as comes "from an ordinary dwelling-house."

The Density of Alloys of Gold and Copper.

Considering the importance of alloys of gold and copper, it is strange that the densities of but few of them have been determined with accuracy.

In the year 1873 I took advantage of the presence in this country of Professor Zenger, of Prague, to make, in conjunction with him, some experiments with the tangent balance which he devised,* in order to ascertain what relation could be established between the composition and the density of alloys of gold and copper.

The alloy was weighed first in air, and then in water, a small mirror being attached to the beam of the balance, so that the amount of angular deflection might be measured by a reflected beam of light. By this means the indications of the balance were magnified, but the experiments were abandoned, as it appeared that the best results the method could afford would be less accurate and trustworthy than those given by the ordinary methods of assay.

The possibility of accurately deducing the fineness of alloys of gold and copper from their densities has, however, been recently discussed by Dr. O. J. Broch, Professor of Mathematics at Christiania, who concludes from a series of elaborate experiments† that the probable error of a single observation on a weight of about 90 grammes is ±0·0014, and that three times this probable error might be taken as the

* Phil. Mag., vol. XL., 1871, p. 445.
† "Norwegian Nyt. Mag. for Naturvid," Christiania 1875. Translated in the appendix to the 10th Annual Report of the Warden of the Standards, 1876, p. 59.

limit which ought never to be exceeded. A difference in fineness of $\pm\frac{1}{1000}$th in a gold alloy of about 900 standard, corresponds with a difference in specific gravity of $\pm 0{\cdot}0019$; it follows, therefore, that the limit of error in the determination of the specific gravity of such an alloy corresponds with a variation in fineness of $\frac{3}{1000}$, from which Dr. Broch concludes that, if two masses of gold coin are compared, the difference in their fineness can be determined with certainty within the $\frac{3}{1000}$th part by weighing them first in air and then in water. The presence in the coins of foreign metals which do not greatly differ in specific gravity from copper is of little importance; thus, if in a 900 alloy $\frac{1}{1000}$th part of copper be replaced by $\frac{1}{1000}$th part of silver, the calculated density is raised from 17·1662 to 17·1723, which corresponds with a difference in fineness of $\frac{3}{1000}$ths.

It is now generally admitted that in the ordinary method of assay the error in a single determination of the composition of an alloy is confined within the limits of $\pm\frac{3}{1000}$th, and Dr. Broch claims that by simply taking the density of an alloy, which is, theoretically at least, a very simple operation, the composition may be accurately determined to the $\frac{3}{1000}$th.

The observations of Dr. Broch afforded a starting point for a more extended inquiry, the main object of which was to ascertain whether the formation of any alloy of gold and copper is attended with expansion [illegible] it is well known that the densities of but [illegible]tion would indicate. Calvert and Johnson, [illegible]s of many alloys," state as the result of their [illegible]f copper always contract." They do not [illegible]oys of gold and copper, but in the absence [illegible] appeared probable at the outset that the [illegible]d obey the above law. Matthiessen showed [illegible] alloys of gold and silver and of gold and [illegible]8 per cent., respectively, higher than their calculated densities.† More recently M. Alfred Rich‡ has pointed out that copper and tin contract in alloying, the contraction being slight and regular up to the alloys containing 48 per cent. of tin, and that from this point it suddenly increases and attains a maximum at the alloy containing 38 per cent. of tin, the density of which is higher than that of pure copper. A curve showing the results of his experiments is given in the corner of the diagram on page 45, from which it will be evident that, if one of a series of alloys contracts or expands more than the rest, the alloys in its immediate neighbourhood divide themselves into three groups, the densities of which are comprised within the same limits, although they differ in composition. Such, for instance, are the alloys in the tin-copper series, which contain respectively 42, 29, and 18 per cent. of tin; it follows, therefore, that the determination of the density of any one of these alloys would leave its composition uncertain, and that, if gold-copper alloys should resemble those of tin-copper, any method of ascertaining their composition which was based on the determination of their densities would lose much of its value.

In order to ascertain whether this were the case or no, a series of alloys was prepared by melting pure gold with pure copper, the composition of the alloy so produced being verified by the ordinary method of assay. The gold was purified by the method adopted in the preparation of the pure gold trial plate, of which full details have already

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* Phil. Mag., vol. XVIII, 1859, p. 351.
† Phil. Trans., 1860, p. 177.
‡ Ann. de Chimie et de Physique, tom. XXX., 1873.

been given,* and as regards the copper, the high electric conductivity it possessed was considered to afford sufficient evidence of its purity.

As the method of deducing composition from density was proposed for testing coin, it appeared advisable to examine a series of alloys in the form of discs, each of which had been compressed between engraved dies with as nearly as possible the same force, as it is well known that the density of metals and alloys is altered by pressure; thus gold varies with compression from 19·258 to 19·367, and the density of copper may be increased from 8·535 to 8·916.† The ordinary method for determining the density of solids was used.‡ A cage of platinum wire was suspended by a very fine platinum wire from the under surface of a short pan, adapted to one of Oertling's fine assay balances, which, when loaded, was capable of distinctly indicating the $\frac{1}{10000}$th of a gramme. The disc of metal was placed in the short pan, and the balance brought to equilibrium by a counterpoise of lead foil placed in the opposite pan, supplemented by a rider weighing $\frac{1}{1000}$th of a gramme. The disc was then removed from the pan and replaced by carefully adjusted metric weights, the amount of which gave at once the exact weight of the disc, and the weighings were independent of differences in the relative lengths of the balance arms. The disc was then placed in the cage, which was detached from the balance, and boiled in distilled water for some time, and when the water was sufficiently cool, the vessel was placed under a bell glass, which was rendered vacuous by a good air pump. The vessel was then placed under the pan of the balance, from which the cage containing the disc was again suspended, and the equilibrium of the balance was restored by placing weights in the short pan, the temperature of the water during the operation being carefully noted. The disc was then removed below the surface of the water by the aid of forceps, and the equilibrium of the balance was again restored in order to ascertain the weight of the water displaced by the cage.

The results are given in the third column of the accompanying table.

(*For Table, see next page.*)

while the fifth column gives the densities of the several alloys, which have been calculated on the assumption that the union of the two metals is attended neither by contraction nor expansion,§ and these latter results are graphically represented by the curve, of which the co-ordinates are the proportions of gold in the several alloys and their densities.

The means of the densities of the discs, as found by experiment, are indicated by crosses, and, as they closely correspond‖ with the results of calculation, it follows that the above assumption may be taken to be

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* Fourth Annual Report (1870), appendix, p. 46.

† "Metallurgy of Copper," by John Percy, M.D., F.R.S., p. 286. (London, 1861.)

‡ $D = \frac{P}{P^1} \cdot \frac{1 + Kt}{1 + \delta_t} - \frac{P - P^1}{P}\left(1 + Kt\right) s$

in which D = the required density.
P = the weight substituted for the disc.
P^1 = the weight added in the third operation minus the weight of water displaced by the cage.
K = co-efficient of cubic expansion of the alloy.
t = the temperature.
$\frac{1}{1+\delta_t}$ = the density of the water at the temperature t.
s = 0·001 293 grammes, the weight of one cubic centimetre of air at the ordinary temperature and pressure.

§ The following is the formula which was employed, $\frac{W}{D} = \frac{ac}{d} + \frac{a_1 c_1}{d_1}$
where a = 19·362 and
a_1 = 8·999

‖ This correspondence would not have been so close if 8·8, the usually accepted density of copper, had been taken, instead of 8·9, which is the number generally used by Dr. Roch. Thus the calculated density of the alloy 900·5 would be 17·2911 instead of 17·1730.

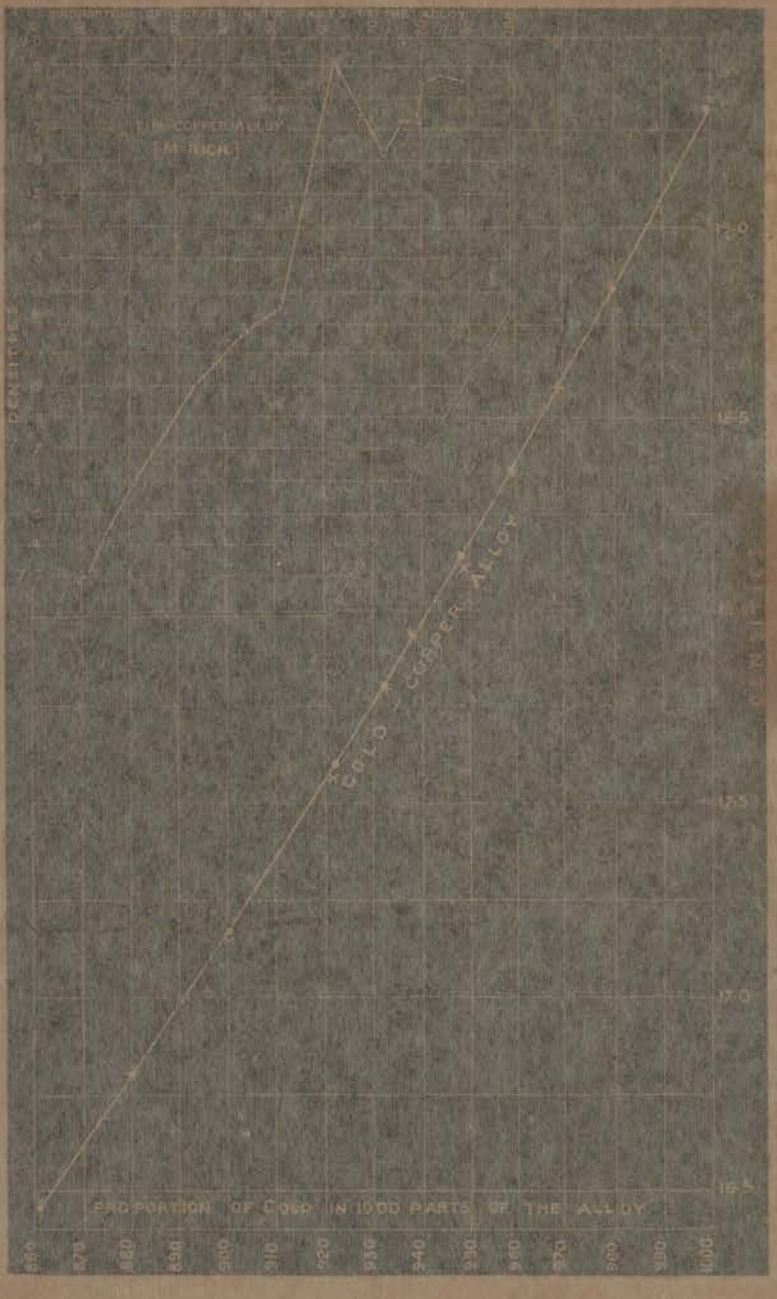
Densities of Gold-Copper Alloys.

Proportion of Gold in 1,000 parts of the Alloy.	Densities of the Alloys in the Form of Plates.	Densities of the Alloys in the Form of Ingots.	Means.	Densities [Calculated].	Differences.	Coefficients of Orbital Excentricity [Calculated].*
Pure Gold		19·3184				
1,000		19·3208	19·3202	19·30207	+0·0181	0·00004245
		19·3217				
989·1	18·787	18·8401				
	18·845	18·8392	18·8396	18·8355	+0·0520	0·00004270
	18·835	18·8362				
908·8	18·719	18·5813				
	18·639	18·5778	18·5805	18·5804	+0·0001	0·00004254
	18·651	18·5824				
815·6	18·512	18·3558				
	18·525	18·3571	18·3562	18·3605	−0·0043	0·00004202
	18·476	18·3557				
736·4	18·119	18·1170				
	18·130	18·1218	18·1173	18·1378	−0·0205	0·00004503
	18·161	18·1150				
682·6	17·766	17·9364				
[Au_2Cu]	17·756	17·9335	17·9340	17·9307	+0·0033	0·00004319
	17·790	17·9322				
672·0		17·7925				
		17·7967	17·7911	17·7958	−0·0047	0·00004328
		17·7943				
662·5		17·5665				
		17·5677	17·56802	17·6087	−0·0307	0·00004337
		17·5699				
560·5		17·1642				
[Au_3Cu]		17·1670	17·1653	17·1750	−0·0097	0·00004367
		17·1659				
380·5		16·8056				
		16·8058	16·8063	16·8047	+0·0015	0·00004380
		16·8041				
361·4		16·4699				
[Au_4Cu]		16·4840	16·4832	16·4630	+0·0202	0·00004399
		16·4848				

* By the following formula $K V = K_1 V_1 + K_2 V_2$, where K and V are the coefficient and volume of the alloy, and K_1, V_1 and K_2, V_2 those of its constituents; K_2 (for copper) = 0·00004824.

† 19·2908 [Chisholm]; density of a cast ingot weighing 76 ounces, 19·2948 [Riche]; 8·6 was taken for the density of copper.

DIAGRAM SHOWING THE DENSITIES OF GOLD-COPPER AND TIN-COPPER ALLOYS.



correct, so far as the experiments have as yet been conducted. The amounts of gold in the alloys examined vary from 860 to 980 thousandths, and although the range might have been extended so as to include alloys containing less gold, it comprises the standards of all the gold coins which are issued at the present day.

The experiments justify the belief in the possibility of deducing the fineness of gold coins from their densities, and show that it will be easy to verify the standard of large masses of gold coin without destroying their integrity, a fact which may prove to be of great value in conducting Trials of the Pyx. The method is, however, not equally serviceable for ascertaining the composition of individual coins, as the sources of error, which are the same as when operating on large quantities, occasion much greater divergence in the results.

It is not probable that in the compressed disc the alloy is at its maximum density, as gold is most dense in the finely divided state in which it is precipitated from solution; and in conducting the above inquiry, filings from the several alloys were first employed, in the manner indicated by M. Rich. The method has the advantage of eliminating error due to the presence of cavities in a cast ingot, and to differences in the internal structure of the mass. A large number of determinations were made by this method, but it was found impossible to obtain concordant results, as, in the use of the Specific Gravity flask, a very slight error in determining the weight of so heavy a substance as a gold alloy occasions very great error in estimating the weight of the water it displaces, and this cannot be determined directly. A few of the results obtained are given in the second column of the table; they are, however, not satisfactory, and the experiments were not continued beyond the alloy containing 938·5 thousandths of gold, at which point they began to exhibit a still greater divergence from the calculated densities.

Additional experiments are now in progress to determine the densities of a complete series of alloys, but unless a cusp of considerable magnitude should be found to exist in the remaining portion of the curve, the inquiry may, for all practical purposes, be considered to be complete.

It only remains for me to acknowledge the valuable aid I have received in conducting the inquiry from Mr. Edward Rigg, one of the Assistant Assayers.

I may, perhaps, be permitted to point out that the metallurgical arrangements of the Mint suffer, though in a less degree than the mechanical, from the delay in placing the Mint on a proper footing. Thus, among many points which have for some years occupied the attention of the practical officers, and have formed the subject of careful discussion, the furnaces in the Melting Houses are capable of much improvement; the arrangements for the preliminary treatment of sweep are still far from perfect, and the annealing furnaces should be remodelled.

While the present state of things continues, the best efforts of the scientific officers have to be devoted to maintaining the accuracy of the coinage in the face of great difficulty and under adverse conditions, instead of to applying the knowledge gained during the visit to European Mints in 1870, supplemented by more recent experience.

W. Chandler Roberts.

Royal Mint, 7th March 1877.

No. III.

General Account of Expenses and Receipts.

Abstract Statement, showing the payments in the Year ended 31st December 1876, for the Salaries and Expenses of the Royal Mint; the amounts of Profit or Loss resulting in the Year on account of the Silver and Bronze Coinage (as per Accounts appended); and the amount realised by the sale of Sweepings from the Gold Coinage, and other miscellaneous receipts of the Mint payable to the Exchequer.

	£	s.	d.	£	s.	d.
Payments in the year for salaries and expenses, viz.:						
Salaries, allowances, and wages	14,804	0	0			
Police	693	15	4			
Incidental office expenses	161	9	9			
Machinery and repairs	1,376	10	6			
Incidental coinage expenses	9,931	7	11			
Brokerage	485	18	7			
Packing specie for Treasury chest	69	10	6			
				27,521	5	7
Superannuation and compensation allowances				4,856	5	7
Amount of expenditure incurred in the year by other Departments on account of the Mint, viz.:						
By the Office of Works, for repair of buildings, and for fuel, gas, &c.	4,568	8	2			
By the Stationery Office for stationery, &c.	200	0	0	4,768	8	9
				37,145	19	4
Cost of alloy metal for gold coinage				357	16	11
Loss on gold coinage				513	3	1
Loss on worn silver coin exchanged (as per Account, page 48)				32,998	17	11
Do. exchanged at the Sydney Mint				259	12	3
Loss on Silver Bullion Account (as per Account, page 48)				174	16	0
				71,450	5	5

	£	s.	d.	£	s.	d.
Profit on silver bullion purchased in the year for coinage (as per Account, page 48)				Nil		
Profit on bronze coinage (as per Account, page 49)				44,289	5	11
Amount received for Sweepings from the Gold Coinage				1,245	14	10
Miscellaneous receipts, viz.:						
For dies supplied for the Sydney and Melbourne Mints	150	0	0			
For striking medals, making assays, and other Mint charges on account of the Indian and Colonial Governments	434	9	9			
For rent of Refinery, and other miscellaneous receipts	611	1	0			
				1,195	10	9
				46,730	11	6
Excess of expenses over receipts in the year ended 31st December 1876				24,719	13	11
				71,450	5	5

Royal Mint,
2nd March 1877.

C. W. Fremantle,
Deputy Master of the Mint.

No IV.

SILVER COINAGE ACCOUNT.

ACCOUNT of the payments made in the Year ended 31st December 1876, for the purchase of Silver Bullion and for worn Silver Coin; the amount received for New Silver Coin sold: and the value of Silver Coin and Bullion in store at the commencement and close of the Year; showing the amount of Profit realised on the Silver Bullion purchased for Coinage, and the Loss resulting from the exchange of worn Silver Coin, in the Year.

	Silver Bullion.	Worn Silver Coin.
	£ s. d.	£ s. d.
Mint value of silver coin and bullion in store at the commencement of the year:		
£ s. d.		
Coin - - 76,355 8 6		
Bullion - - 132,486 9 1		
	208,841 17 7	
Amount paid in the year for silver bullion purchased - - - -	Nil	
Mint value of worn silver coin melted into bullion (transferred as per contra)	243,001 2 8	
Amount paid for metal (for alloy) - - -	Nil.	
Value of copper (for alloy) transferred from Copper Coinage Account -	Nil.	
Amount paid in exchange for worn silver coin at the nominal value (883,640·410 oz.) - - -	- - -	276,000 0 0
Profit on silver bullion purchased for coinage - - - -	Nil	
	451,842 19 10	276,000 0 0

	Silver Bullion.	Worn Silver Coin.
	£ s. d.	£ s. d.
Amount received in the year for silver coin sold at its nominal value - -	210,645 3 6	
Amount received for sweepings - -	157 11 5	
Mint value of silver coin melted into bullion (883,640·410 oz. at 5s. 6d. per oz.) transferred to silver bullion account as per contra - - - -	- - -	243,001 2 8
Mint value of silver coin and bullion in store at the end of the year:—		
£ s. d.		
New coin at its nominal value - - 88,257 4 3		
Bullion at the Mint value of 5s. 6d. per ounce - - 152,608 4 8		
	240,865 8 11	
Loss on Silver Bullion during the year -	174 16 0	
Loss on worn silver coin exchanged -	- - -	32,998 17 9
£	451,842 19 10	276,000 0 0

	£ s. d.	£ s. d.
Waste (partially recoverable in sweepings) -	332 5 2	
Minus by tale on silver coined in the year -	0 4 8	
		332 7 5
Deduct [illegible]ved for sweepings - -		157 11 5
[illegible]s above, on silver bullion account - -		174 16 0

Royal Mint,
2nd March 187[illegible]

C. W. FREMANTLE,
Deputy Master of the Mint.

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No. V.

COPPER (BRONZE) COINAGE ACCOUNT.

ACCOUNT of the payments made in the Year ended 31st December 1876, for the purchase of Copper and other Metal for Bronze Coinage, including old Copper Coin; the amount received for Bronze Coin and old Copper sold; and the value of Bronze Coin and Metal in store at the commencement and close of the Year; showing the amount of Profit or Loss which has resulted in the Year.

	£	s.	d.	£	s.	d.
Value of bronze coin and metal in store at the commencement of the year :—						
Bronze coin (at its nominal value)	5,703	19	4			
*Bronze bars (at the Mint value)	45,816	18	3			
Old copper coin (at the market value of the metal)	112	2	3			
Tin (do.)	61	1	5			
Zinc (do.)	19	14	3			
				51,713	15	6
Amount paid in the year for bronze metal	12,685	0	0			
For copper						
For tin	Nil					
For zinc						
				12,685	0	0
Amount paid for old copper coin (at its nominal value)				1,978	14	10
				66,377	10	4
Balance, viz.:						
Profit on bronze coinage	44,289	5	11			
Amount realised by the sale, &c., of surplus metal (old copper coin)	Nil					
				44,289	5	11
				110,666	16	3

	£	s.	d.	£	s.	d.
Amount received in the year for bronze coin sold at its nominal value				49,941	5	0
Amount received for sweepings				Nil		
Value of old copper coin transferred to Silver Coinage Account (for alloy)				Nil		
Value of bronze coin and metal in store at the end of the year :—						
Bronze coin (at its nominal value)	13,168	8	7			
*Bronze bars (at the Mint value)	46,718	1	1			
Old copper coin (at the market value of the metal)	763	18	2			
Tin (do.)	58	3	3			
Zinc (do.)	17	0	2			
				60,725	11	3
				110,666	16	3

* The value of bronze bars is calculated on the assumption that a proportion will be coined into pence and the remainder into halfpence and farthings.

Royal Mint,
2nd March 1877.

C. W. FREMANTLE,
Deputy Master of the Mint.

No. VI.

Consolidated Fund Advances and Repayments.

An Account of the sums advanced in each Year from the Consolidated Fund for the purchase of Bullion for Coinage; and of the sums paid in each Year to the account of Her Majesty's Exchequer at the Bank of England in repayment thereof.

Date.	Amounts Advanced from the Consolidated Fund.			Amounts paid into the Exchequer in Repayment of Advances.			Remarks.
	£	s.	d.	£	s.	d.	
1837	22,500	0	0	-	-	-	
1838	196,629	19	4	168,629	19	4	
1839	400,000	0	0	350,000	0	0	
1840	170,600	0	0	175,000	0	0	
1841	100,000	0	0	135,000	0	0	
1842	180,000	0	0	162,120	4	0	
1843	330,000	0	0	295,000	0	0	
1844	550,000	0	0	501,889	17	9	
1845	850,000	0	0	678,772	2	9	
1846	300,000	0	0	429,937	1	11	
1847	100,000	0	0	217,035	10	2	
1848	-	-	-	18,534	3	1	
1849	150,000	0	0	120,000	0	0	
1850	150,000	0	0	120,000	0	0	
1851	100,000	0	0	197,213	1	1	
1852	301,979	0	8	191,979	0	8	
1853	308,020	19	4	550,000	0	0	
1854	100,000	0	0	200,000	0	0	
1855	250,000	0	0	300,000	0	0	As given in detail in previous Returns.
1856	450,000	0	0	420,000	0	0	
1857	420,000	0	0	350,000	0	0	
1858	400,000	0	0	400,000	0	0	
1859	550,000	0	0	650,000	0	0	
1860	270,000	0	0	150,000	0	0	
1861	400,000	0	0	550,000	0	0	
1862	400,000	0	0	350,000	0	0	
1863	250,000	0	0	250,000	0	0	
1864	600,000	0	0	650,000	0	0	
1865	520,000	0	0	400,000	0	0	
1866	410,000	0	0	510,000	0	0	
1867	300,000	0	0	250,000	0	0	
1868	220,000	0	0	200,000	0	0	
1869	250,000	0	0	130,000	0	0	
1870	255,000	0	0	350,000	0	0	
1871	820,000	0	0	600,000	0	0	
1872	1,750,000	0	0	1,250,000	0	0	
1873	650,000	0	0	950,000	0	0	
1874	650,000	0	0	763,029	19	4	
1875	500,000	0	0	650,000	0	0	
1876 (Jan. 27)	100,000	0	0				
(May 8)	75,000	0	0				
(Aug. 3)	50,000	0	0				
(Nov. 2)	50,000	0	0				
(Dec. 11)	50,000	0	0				
	325,000	0	0				
1876 (Feb. 9)				50,000			
(July 28)				50,000			
(Aug. 29)				50,000			
(Nov. 8)				50,000			
(Dec. 28)				50,000			
				250,000	0	0	
Balance due to the Exchequer on 31 Dec. 1876				325,000	0	0	
	£ 15,225,029	19	4	£ 15,225,029	19	4	

Royal Mint,
2nd March 1877.

C. W. Fremantle,
Deputy Master of the Mint.

No. VII.

Moneys coined, &c. in the last Ten Years.

Statement of all Gold, Silver, and Copper Moneys of the Realm, coined at the Mint, and of worn Silver Coin exchanged, &c., from the 1st day of January 1867 to the 31st day of December 1876.

GOLD COINAGE.

Date.	Sovereigns.			Half Sovereigns.			Total Value.
	Weight.	Number of Pieces.	Value.	Weight.	Number of Pieces.	Value.	
	oz.		£ s. d.	oz.		£ s. d.	£ s. d.
1867	—	—	—	127,485·816	992,795	496,397 17 11	496,397 17 11
1868	424,625·208	1,653,384	1,653,384 8 0	—	—	—	1,653,384 8 0
1869	1,654,272·155	6,441,822	6,441,822 4 0	239,070·996	1,861,764	930,882 13 9	7,372,204 17 9
1870	468,104·162	1,822,680	1,822,680 11 7	126,021·208	981,408	490,704 7 4	2,313,384 18 11
1871	2,262,799·407	8,810,775	8,810,775 3 4	284,784·820	2,217,769	1,108,880 17 10	9,919,656 1 2
1872	3,504,647·644	13,645,890	13,645,885 10 7	415,423·760	3,235,112	1,617,556 5 3	15,263,441 15 10
1873	611,964·060	2,382,832	2,382,832 4 0	257,267·094	2,003,464	1,001,732 14 11	3,384,568 18 11
1874	133,372·050	519,628	519,628 18 4	241,903·844	1,883,572	941,936 0 1	1,461,565 7 5
1875	—	—	—	62,475·514	486,494	243,264 0 8	243,264 0 8
1876	846,153·264	3,294,700	3,294,705 7 6	360,049·696	2,804,000	1,401,943 10 1	4,696,648 17 7
	9,865,416·954	38,569,261	38,569,217 7 4	2,114,488·538	16,466,669	8,233,290 16 10	46,802,517 4 2

SILVER COINAGE.

Date.	Half Crowns.			Florins.			Shillings.		
	Weight.	Number of Pieces.	Value.	Weight.	Number of Pieces.	Value.	Weight.	Number of Pieces.	Value.
	oz.		£	oz.		£	oz.		£
1867	—	—	—	154,080·000	423,720	42,372	393,840·000	2,166,120	108,306
1868	—	—	—	320,166·000	880,940	88,094	605,520·000	3,330,360	166,518
1869	—	—	—	106,000·000	297,000	29,700	133,920·000	736,560	36,828
1870	—	—	—	718,560·000	1,976,040	197,604	347,040·000	1,908,720	95,436
1871	—	—	—	1,297,845·000	3,558,960	355,896	876,240·000	4,819,320	240,966
1872	—	—	—	2,516,400·000	6,920,160	692,016	1,612,080·000	8,866,440	443,322
1873	—	—	—	2,169,360·000	5,965,740	596,574	1,179,360·000	6,486,480	324,324
1874	263,880·000	2,185,920	273,240	657,360·000	1,807,740	180,774	1,000,080·000	5,500,440	275,022
1875	505,440·000	1,111,968	138,996	415,440·000	1,142,460	114,246	792,000·000	4,356,000	217,800
1876	288,000·000	633,600	79,200	221,040·000	607,860	60,786	139,680·000	768,240	38,412
	1,787,040·000	3,931,488	491,436	8,580,240·000	23,595,660	2,359,560	7,079,760·000	39,038,880	1,946,184

* The amounts for 1876 shown in this Return differ from those given on page 4, as the latter give the number of good pieces actually coined, while the former show the amount of coin delivered to the public, or into store at the Mint Office, during the year.

SILVER COINAGE—*cont.*

Date.	Sixpences.			Fourpences.			Threepences.		
	Weight.	Number of Pieces.	Value.	Weight.	Number of Pieces.	Value.	Weight.	Number of Pieces.	Value.
	oz.		£	oz.		£ s. d.	oz.		£ s. d.
1867	123,840·000	1,362,240	34,056	252·000	4,158	69 6 0	32,804·000	717,388	8,966 [illegible]
1868	97,200·000	1,069,200	26,730	252·000	4,158	69 6 0	56,444·000	1,461,703	18,272 [illegible]
1869	35,280·000	388,080	9,702	252·000	4,158	69 6 0	594·000	4,488	56 [illegible]
1870	95,040·000	1,045,440	26,136	252·000	4,158	69 6 0	63,384·000	1,398,408	17,480 [illegible]
1871	253,260·000	2,666,960	91,674	252·000	4,158	69 6 0	47,004·000	1,634,088	12,929 [illegible]
1872	343,440·000	3,777,840	94,446	252·000	4,158	69 6 0	50,604·000	1,115,288	13,970 [illegible]
1873	399,600·000	4,395,600	109,890	252·000	4,158	69 6 0	184,324·000	4,059,528	50,744 [illegible]
1874	284,480·000	4,229,280	105,732	252·000	4,158	69 6 0	202,524·000	4,455,528	55,694 [illegible]
1875	295,920·000	3,255,120	81,378	252·000	4,158	69 6 0	150,684·000	3,315,048	41,438 [illegible]
1876	76,320·000	839,520	20,988	252·000	4,158	69 6 0	83,004·000	1,826,088	22,826 [illegible]
	2,184,480·000	24,029,280	606,732	2,520·000	41,580	696 0 0	881,160·000	19,385,520	242,319 [illegible]

SILVER COINAGE—*cont.*

Date.	Twopences.			Pence.			Total Value of Silver Coined.	Total Amount Paid for Silver Bullion.
	Weight.	Number of Pieces.	Value.	Weight.	Number of Pieces.	Value.		
	oz.		£ s. d.	oz.		£ s. d.	£ s. d.	£ s. d.
1867	144·000	4,752	39 12 0	120·000	7,920	33 0 0	193,842 0 0	191,000 17 11
1868	144·000	4,752	39 12 0	120·000	7,920	33 0 0	361,356 0 0	80,744 15 6
1869	144·000	4,752	39 12 0	120·000	7,920	33 0 0	75,428 0 0	135,083 0 11
1870	144·000	4,752	39 12 0	120·000	7,920	33 0 0	336,798 0 0	100,483 5 3
1871	144·000	4,752	39 12 0	120·000	7,920	33 0 0	701,514 0 0	720,821 15 9
1872	144·000	4,752	39 12 0	120·000	7,920	33 0 0	1,243,836 0 0	1,544,848 14 8
1873	144·000	4,752	39 12 0	120·000	7,920	33 0 0	1,061,074 0 0	329,907 0 2
1874	144·000	4,752	39 12 0	120·000	7,920	33 0 0	920,004 0 0	421,938 7 9
1875	144·000	4,752	39 12 0	120·000	7,920	33 0 0	594,060 0 0	388,744 17 3
1876	144·000	4,752	39 12 0	120·000	7,920	33 0 0	222,354 0 0	—
	1,440·000	47,520	396 0 0	1,200·000	79,200	330 0 0	5,645,406 0 0	4,006,612 6 2

BRONZE COINAGE.

Date.	Pence.			Halfpence.			Farthings.			Total Value of Bronze Coined.	Total Amount Paid for Bronze Bullion and Old Copper Coin.
	Weight.	Number of Pieces.	Value.	Weight.	Number of Pieces.	Value.	Weight.	Number of Pieces.	Value.		
	Tons.		£	Tons.		£ s. d.	Tns.cwt.qr.lbs.		£ s. d.	£ s. d.	£ s.
1867	51	5,483,520	22,848	14	2,508,800	5,226 13 4	14 0 0 0	5,017,600	5,226 13 4	33,301 6 8	6,280 0
1868	11	1,182,720	4,928	17	3,046,400	6,346 13 4	13 19 2 24	4,851,208	5,053 0 10	16,328 0 2	5,059 0
1870	34	3,580,480	10,736	16	2,925,600	6,720 0 0	9 0 0 0	3,225,600	3,360 0 0	20,832 0 0	8,353 17
1870	58	6,698,880	23,744	24	4,300,800	8,960 0 0	- - -	- - -	- - -	32,704 0 0	6,793 1
1871	15	1,290,240	5,376	6	1,075,200	2,240 0 0	- - -	- - -	- - -	7,616 0 0	1,196 1
1872	80	8,601,600	35,840	25	4,480,000	9,333 6 8	6 0 0 0	2,150,400	2,240 0 0	47,413 6 8	808 1
1873	70	8,404,080	35,392	20	3,584,000	7,466 13 4	9 0 0 0	3,225,600	3,360 0 0	46,218 13 4	13,618
1874	100	11,712,000	48,832	33	6,272,000	13,066 13 4	10 0 0 0	3,584,000	3,733 6 8	65,832 0 0	50,997
1875	110	12,337,200	49,289	30	6,451,200	13,440 0 0	19 0 0 0	6,963,600	7,003 6 8	69,813 6 8	24,000
1876	*103	11,074,560	46,144	*38	6,809,600	14,186 13 4	*3 0 0 0	1,075,200	1,120 0 0	61,450 13 4	14,563 1
	632	67,952,640	283,136	223	41,753,600	86,986 13 4	83 19 2 24	29,939,208	31,196 13 6	401,309 6 10	111,776 1

* Coined at Birmingham.

Worn Silver Coin purchased for Exchange.

Date.	Weight.	Nominal Value.	Mint Value at 5s. 6d. per oz.	Loss by Exchange.
	oz.	£	£ s. d.	£ s. d.
1867 - -	376,142·927	120,000	103,439 6 0	16,560 14 0
1868 - -	388,878·207	125,000	106,941 10 6	18,058 3 6
1869 - -	325,976·928	105,000	89,643 13 6	15,356 7 0
1870 - -	356,023·235	115,000	97,906 8 0	17,093 12 0
1871 - -	326,107·111	105,000	89,679 9 1	15,320 10 11
1872 - -	347,584·522	110,686 14	95,585 14 11	15,100 19 1
1873 - -	594,222·521	188,263 6	163,411 3 11	24,852 2 1
1874 - -	490,416·000	156,555	136,514 8 0	19,840 12 0
1875 - -	468,272·873	154,000	134,269 11 3	19,730 8 9
1876 - -	883,640·410	276,000	243,001 2 3	32,998 17 9
	4,583,264·984	1,455,505	1,260,392 6 11	194,912 13 1

The yearly Average Price paid per ounce for Silver Bullion purchased in the market for coinage in the Years 1867 to 1876, both inclusive, was as follows:—

1867.	1868.	1869.	1870.	1871.	1872.	1873.	1874.	1875.	1876.
d.	d.	d.	d.	d.	d.	d.	d.	d.	d.
60¾	60¾	60 5/8	60½	60 1/8	60 1/16	58 13/16	58¾	56¾	Nil

The Amount of Seignorage paid into the Exchequer in the Years 1867 to 1876 has been—

1867.	1868.	1869.	1870.	1871.	1872.	1873.	1874.	1875.	1876.
£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
31 10 7	18,622 7 4	12,345 4 10	9,027 17 9	55,067 19 4	77,391 12 10	83,680 10 2	101,120 0 0	20,306 10 4	52,256 2 0

Royal Mint,
2nd March 1877.

C. W. Fremantle,
Deputy Master of the Mint.

No. VIII.

Issue of Bronze Coin, &c., to 31st December 1876.

New Bronze Coin issued during the Year 1876. (Nominal Value.)				Old Copper Coin withdrawn from Circulation during the Year 1876. (Nominal Value.)	Total Issue of Bronze Coin from 17 December 1860 to 31 December 1876. (Nominal Value.)				Total Amount of Old Copper Coin purchased from the Public and withdrawn from Circulation from 17 Dec. 1860 to 31 Dec. 1876. (Nominal Value.)	Amount of New Bronze Coin in Store at the Mint, [illegible] on [illegible] (Nominal Value.)	
Pence.	Half-pence.	Far-things.	Total.		Pence.	Half-pence.	Far-things.	Total.		Pence.	
£ 36,055	£ 10,145	£ 3,375	£ 49,575	£ s. d. 1,976 14 10	£ 865,755	£ 392,773	£ 67,386	£ 1,325,913	£ s. d. 579,063 16 6	£ s. d. 10,260 17 11	[illegible]

C. W. Fremantle,
Deputy Master of the Mint.

Royal Mint,
2nd March 1877.

No. IX.

Verdict of the Jury of the Goldsmiths' Company at the Trial of the Pyx held on the 5th of July 1876.

We, whose names are hereunder written, having been sworn this 5th day of July 1876, before the Queen's Remembrancer, at Goldsmiths' Hall, in the City of London, have made the assays and trials of Her Majesty's gold and silver coins in the Pyx of the Mint, and which, according to accounts produced by the Officers of the Mint, were coined in the said Mint from the 1st day of July 1875 to the 30th day of June 1876, both days inclusive. We ascertained that the number of coins, both of gold and silver, in each packet produced to us, corresponded with the number which the Officers of the Mint represented it to contain, and we took a coin or coins from each of such packets of gold coins, making altogether 20 sovereigns or 20-shilling pieces, and 24 half-sovereigns or 10-shilling pieces, and we weighed each of the said coins separately, so as to ascertain whether they were within the remedy prescribed in the First Schedule of the Coinage Act, 1870. We found that the amount of variation from the standard of weight specified in the said First Schedule of the said Act was minus two thousandths of an ounce (or ·002) on the whole of such coins, and that, therefore, they were within the prescribed remedy as to weight. We then melted the said gold coins, so taken out and weighed, into an ingot, and assayed such ingot, comparing it with the standard gold trial-plate produced by the Board of Trade, so as to ascertain whether the metal was within the remedy as to fineness prescribed in the said First Schedule to the said Act, and we found that there was no variation from the standard of fineness specified in the said First Schedule to the said Act. We weighed the residue of the said gold coins in bulk, and we ascertained that they were within the remedy as to weight. We then took from such residue two sovereigns and two half-sovereigns, and weighed and assayed them separately, and we found that such sovereigns weighed respectively,—the first, 123·324 grains, and the second 123·354 grains, and that such half-sovereigns weighed respectively,—the first 61·637 grains, and the second 61·667 grains. We then assayed the said two sovereigns and two half-sovereigns separately, and we found the millesimal fineness of such

sovereigns to be 916·3 and 916·3 respectively, and the millesimal fineness of such half-sovereigns to be 916·5 and 916·6 respectively. We also took a coin from each of such packets of silver coins, making altogether 10 half-crowns, 6 florins, 13 shillings, 11 sixpences, and of Maundy moneys, 1 fourpenny piece, and 8 threepences, and weighed each of the said silver coins separately, so as to ascertain whether they were within the remedy of the said First Schedule of the said Coinage Act, 1870. We found that the amount of variation from the standard of weight specified in the said First Schedule of the said Act was minus two thousandths of an ounce (or ·002) on the whole of such coins, and that therefore they were within the prescribed remedy as to weight. We then melted the said silver coins, so taken out and weighed, into an ingot, and assayed such ingot, comparing it with the standard silver trial-plate produced by the Board of Trade, so as to ascertain whether the metal was within the remedy as to fineness prescribed in the said First Schedule to the said Act, and we found that the amount of variation from the standard of fineness specified in the said First Schedule to the said Act was minus five ten thousandths (or ·0005), and, therefore, that the said metal was within the prescribed remedy as to fineness. We weighed the residue of the said silver coins in bulk, and we ascertained that they were within the remedy as to weight. We then took from such residue one half-crown, one florin, one shilling, one sixpence, and one threepenny piece, and weighed and assayed them separately, and we found that such half-crown weighed 218·151 grains, that such florin weighed 175·045 grains, that such shilling weighed 87·173 grains, that such sixpence weighed 43·606 grains, and that such threepenny piece weighed 21·838 grains. We then assayed the said half-crown, the said florin, the said shilling, the said sixpence, and the said threepenny piece separately, and we found the millesimal fineness of such half-crown to be 925·0, of such florin to be 924·5, of such shilling to be 924·5, of such sixpence to be 925·4, and of such threepenny piece to be 925·5.

G. Smith Hayter, Foreman.
H. J. Lias.
John Gray.
G. Matthey.
Francis Boone Thomas.
Henry Lias.
R. Ruthven Pym.
H. Matthey.
Hy. Pixey.
Wm. Robinson.

W. F. Pollock,
Queen's Remembrancer.

No. X.

Report of Mr. F. J. Bramwell, F.R.S., as to the nature of the operations of coinage.

Having made an inspection at the Royal Mint, in order to inform myself of the exact nature and extent of the processes in use there, I am now in a position to report upon the question submitted to me, namely, whether such processes could or could not be carried on upon the site proposed for the new Mint, not only without being a source of injury to the neighbourhood of that site, but without even giving rise to any annoyance whatsoever to those in the vicinity.

Before stating the conclusion at which I have arrived, I think it will be well, in order that the reasons for those conclusions may appear, to describe as briefly as possible the nature of the operations that would be conducted at the new Mint.

Let me say in the outset, that "refining," involving the use of chemicals and the emission of acid fumes, is not practised at the Mint at all, and that the Mint does not receive metal to be coined until it has been brought into the condition of ingots ready for coining.

The metal is melted in closed crucibles heated by a perfectly smokeless (coke) fire. The required alloy is made in the process of melting, and the mixture is poured into moulds.

The bars resulting from the castings are then rolled down into fillets of suitable thickness and width for the intended coins. From these fillets the blanks are cut, and these blanks, after having been marked (*i.e.* thickened at their edges), are of suitable dimensions for the finishing operation, that of impressing on the blank the device appropriate to the particular coin.

During the preparatory processes the metal has to be annealed two or three times; this is done in close vessels which are heated in smokeless furnaces.

After the pieces are coined they are passed into the weighing room, where each is tested in automatic weighing machines.

Ancillary to the above-described operations are the preparation and repair of the various dies, involving the use of two or three turning lathes and [illegible] for hardening and tempering.

Formerly the presses used for cutting out the blanks and those employed for coining, acted by percussion; they were screw-presses, fitted at the top [illegible] screw with heavy swinging weights, which on being put into motion caused the screws to descend, and caused the upper die to strike the coin, which [illegible] the stop to arrest the momentum of the press. Such presses were under [illegible] noisy, although not nearly so noisy as an ordinary steam printing press. [illegible] such presses will not be found in the new Mint. They have been already discarded as regards the cutting out the blanks, and, for the coining, a [illegible] press of improved construction is in use. This improved construction is one wherein the coining is done silently by pressure, instead of noisily by percussion.

The rolling and drawing machinery is quite quiet, as of course would be the engines which worked it. The furnaces for the engines are absolutely smokeless, being on the "Jukes" construction.

I believe I have now touched upon all the points which can by any possibility be involved in the question of whether or not the establishment of the Mint on the proposed site (behind the Victoria Embankment close to Lancaster Place) could be in the slightest degree a nuisance to those residing near, and I have no hesitation in saying that not the slightest annoyance could be caused by its being placed there.

Because—

1st. Acid fumes there would be none, for a mint is not a refinery, and must not be confounded with a refinery.

2nd. There would not be so much smoke emitted as comes from an ordinary dwelling-house, for, in the case of the Mint, the thoroughly well-known and efficient means would be taken to prevent smoke, while in the case of a dwelling-house no means whatever are taken.

3rd. There would not be any noise of machinery or of manufacturing audible outside the walls of the building.

(Signed) F. J. Bramwell.

37, *Great George Street, Westminster, S.W.*,
February 29, 1876.

No. XI.

Circular Despatch from the Secretary of State for the Colonies to Colonial Governments, enclosing an Order in Council respecting the withdrawal of old copper coin in British Dependencies.

Downing Street,
Sir, 10th April 1876.

With reference to my Circular Despatch of the 27th April 1874, respecting the withdrawal of the old British copper coins from circulation in the Colonies, I have the honour to transmit to you the accompanying copy of an Order of Her Majesty in Council, dated the 24th of March, approving the draft of a Royal Proclamation for the decrial of those coins in those Colonies

in which it is desired, and in which they have not been already withdrawn from circulation.

Old copper coins will be received at the Mint at their nominal value up to the 31st of December 1877, after which date they will only be received as metal.

It is important that this date should be distinctly understood to be final, in the event of any change of view on the part of those Colonial Governments which, for the present, have decided to retain these coins in circulation.

I have the honour to be,
Sir,
Your most obedient humble Servant,
CARNARVON.

At the Court at Windsor, the 24th day of March 1876.

Present:

The Queen's Most Excellent Majesty in Council.

WHEREAS by Her Majesty's Royal Proclamation, bearing date the thirteenth day of May one thousand eight hundred and sixty-nine, Her Majesty did, with the advice of Her Privy Council, declare and command that no Copper Monies whatsoever, other than and except such Bronze Monies as were then or are now current by virtue of Her Majesty's Proclamation, bearing date the seventeenth day of December, one thousand eight hundred and sixty, or any Proclamation dated subsequently to the said seventeenth day of December, one thousand eight hundred and sixty, should be allowed to pass or be current in any payment whatsoever within the United Kingdom of Great Britain and Ireland after the thirty-first day of December, one thousand eight hundred and sixty-nine; and whereas it hath been represented unto Her Majesty in Council by the Lords Commissioners of Her Majesty's Treasury that it would be expedient that the provisions of the said Proclamation bearing date the thirteenth day of May, one thousand eight hundred and sixty-nine, should be extended to certain of the Colonies and Possessions; and whereas there was this day read at the Board a draft of a Proclamation extending the provisions of the said Proclamation bearing date the thirteenth of May, one thousand eight hundred and sixty-nine, accordingly Her Majesty, having taken the same into consideration, was pleased, by and with the advice of Her Privy Council, to approve thereof, and to order, and it is hereby ordered, that the said Proclamation do take effect and come into force in such of the said Colonies, Possessions, and Dominions wherein proclamation shall have been made or shall be made for decrying the same Copper Monies from the date named in such last-mentioned Proclamation.

And the Lords Commissioners of Her Majesty's Treasury, and the Right Honourable the Earl of Carnarvon, one of Her Majesty's Principal Secretaries of State, are to give the requisite directions for causing publication to be made thereof in Her Majesty's said Colonies and Possessions, and for the other purposes referred to therein accordingly.

C. L. PEEL.

BY THE QUEEN.

A PROCLAMATION.

VICTORIA R.

WHEREAS by Our Royal Proclamation bearing date the thirteenth day of May, One thousand eight hundred and sixty-nine, after reciting that We had taken into consideration the state of the Copper Coin of this Kingdom, and had deemed it expedient, with the advice of Our Privy Council, that all Copper Monies of this Realm, commonly called a Penny, a Half Penny, a Farthing, and a Half Farthing, coined at Our Mint and current in Our dominions by virtue of any Proclamation prior to the seventeenth day of December, One thousand eight hundred and sixty, should be called in and

re-coined: And further reciting that considerable quantities of the said Copper Monies before-mentioned had been received and exchanged at Our Mint, so that only a small portion of such monies was remaining in circulation at the date aforesaid, We did, with the advice of Our Privy Council, declare and command that no Copper Monies whatsoever (other than and except such Bronze Monies as were then and are now current by virtue of Our Proclamation bearing date the seventeenth day of December, One thousand eight hundred and sixty, or any Proclamation dated subsequently to the said seventeenth day of December, One thousand eight hundred and sixty [illegible] be allowed to pass or be current in any payment whatsoever within the United Kingdom of Great Britain and Ireland after the thirty-first day of [illegible] One thousand eight hundred and sixty-nine.

Now, therefore, by this Our Royal Proclamation, and with the advice of Our Privy Council, We do think proper to declare and command [illegible] do hereby declare and command accordingly, that, in whatsoever [illegible] Colonies, Plantations, Possessions, and Dominions there be current [illegible] Monies of this Realm, commonly called a Penny, a Half Penny, a [illegible] and a Half Farthing, other than and except such Bronze Monies as aforesaid, such Copper Monies be no longer allowed to pass or be current in any payment whatever within any of the said Colonies, Plantations, Possessions, and Dominions wherein proclamation shall have been made or shall be made for decrying the same Copper Monies from the date named in such Proclamation.

No. XII.

Order in Council regulating the Currency of the Colony of Mauritius.

At the Court at Osborne House, Isle of Wight, the 12th day of August 1876.

Present:

The Queen's Most Excellent Majesty in Council.

Whereas there was this day read at the Board the draft of a Proclamation for the regulation of the currency of Her Majesty's Colony of Mauritius and its Dependencies (copy whereof is hereto annexed); Her Majesty, having taken the same into consideration, was pleased, by and with the advice of Her Privy Council, to approve thereof, and to order, and it is hereby ordered, that the said Proclamation do take effect and come into force in Her Majesty's Colony of Mauritius and its Dependencies in the manner thereby directed.

And the Lords Commissioners of Her Majesty's Treasury, and the Right Honourable the Earl of Carnarvon, one of Her Majesty's Secretaries of State, are to give the necessary directions herein accordingly.

C. L. Peel.

Draft Proclamation.

1. Whereas by an Order in Council, bearing date 1st February 1843, We were pleased, by and with the advice of Our Privy Council, to approve of the draft of a Proclamation declaring that throughout Our Colony of Mauritius and its Dependencies the gold and silver coins current in India or in the territories of Foreign States should pass current respectively at the rates therein-after specified, and that in all payments to be made in Our said Colony of Mauritius or its Dependencies tender of payment in the said coins, or either of them, should be deemed and taken to be a lawful tender in the same manner as if such tender had been made in the current coin of the United Kingdom.

2. And whereas by an Order in Council, bearing date 16th October 1852, We were pleased, by and with the advice of Our Privy Council, to approve of a draft of a Proclamation declaring that within and throughout our Colonies in Australia and New Zealand, Ceylon and Mauritius, and Hong Kong, the coins of the United Kingdom should pass current in the manner directed in the several Acts of Parliament which regulate the currency of the same, and that the silver coins of the United Kingdom should not be a legal tender in payment of sums exceeding 40 shillings.

3. And whereas by an Order in Council bearing date 19th July 1870, We were pleased, by and with the advice of Our Privy Council, to approve of a draft of a Proclamation whereby the said Order in Council and Proclamation of the 1st of February 1843 was declared to be revoked and rescinded so far as it related to French pieces of one and two francs, but not further or otherwise; and it was further declared that the then new French pieces of one and two francs respectively should pass current throughout Our Colony of Mauritius and its Dependencies at the rates therein-after specified, and that payment in the said coins, or either of them, should be a lawful tender up to and not beyond the amount of two pounds sterling.

4. And whereas by an Order in Council, bearing date 22nd October 1856, We were pleased, by and with the advice of Our Privy Council, to approve of the draft of a Proclamation declaring the rates at which Australian sovereigns and half-sovereigns, coined at the branch of Our Royal Mint at Sydney, in New South Wales, were to pass current in Our Colonies of Ceylon, Mauritius, and Hong Kong.

5. And whereas by Our Proclamation, bearing date 7th August 1869, issued under an Act made and passed in the twenty-ninth and thirtieth years of Our reign (cap. 65.), We, by and with the advice of Our Privy Council, commanded that from and after the date of the publication of such Proclamation in the London Gazette, coins made at the branch of Our Royal Mint at Melbourne, in Victoria, of designs approved by Us, and being of the same weight and fineness as were required by law with respect to gold coins of the same denomination, made at Our Mint in London, should be a legal tender for payments within all parts of Our Dominions in which gold coins issued from Our Mint in London were, at the date of the issue of such Proclamation, a legal tender.

6. Now We, by the advice of Our Privy Council, have thought fit to declare and ordain, and, by the advice aforesaid, We do hereby declare and ordain, that from and after a day to be fixed by the Governor or Officer administering the Government of the Colony of Mauritius and its Dependencies, by Proclamation, the said herein-before mentioned Orders in Council and Proclamations of the 1st day of February 1843, and of the 19th day of July 1870, respectively, and so much of the said herein-before mentioned Orders in Council and Proclamations of the 16th day of October 1852, 22nd day of October 1856, and 7th day of August 1869, as have effect and are in force in the Colony of Mauritius and its Dependencies, shall be revoked and annulled.

7. And we do hereby further ordain and declare that, from and after the same date, the silver rupee of India, of 180 grains weight, and eleven-twelfths fineness, as now legally current in India, and its silver sub-divisions of proportionate intrinsic value, consisting of the half rupee, the quarter rupee, and the eighth part of a rupee, shall be the only legal tender of payment, except as herein-after directed, within Our Colony of Mauritius and its Dependencies.

8. And We do hereby further ordain and declare that, from and after the same date (and subject to further directions to be given by Proclamation of the Governor acting under the authority of the Secretary of State), the British copper and bronze tokens at present in circulation in Our Colony of Mauritius and its Dependencies shall be a legal tender of payment for any sum not exceeding half a rupee, at the following rates, viz.:—

	Rupees.	Cents.
Penny - - - -	0	4
Halfpenny - - - -	0	2
Farthing - - - -	0	1
Half-farthing - - -	0	0½

And such silver, copper, or bronze tokens as may from time to time be specified by the Governor by Proclamation, acting under the authority of the Secretary of State, shall be a legal tender for such sum as may be named in the said Proclamation, provided always, that such sum shall not in any case exceed five rupees.

9. And We do hereby further ordain and declare that, whenever the denomination of British currency shall have been specified in any Regulation, Ordinance, Proclamation, Minute, Notification, or Contract in force at the date as aforesaid of the bringing into operation of this Proclamation, [illegible] as payments to be made to or by the Government of Mauritius, or by [illegible] other persons, such sums shall continue as heretofore to be received and paid at the rate in force at the aforesaid date.

10. And We do hereby further ordain and declare that all other contracts and engagements expressed in terms of British money, in force at the aforesaid date, and payable in Our said currency, shall be defrayable in rupees at the above rate, unless such contract or engagement shall contain any express provision or agreement to the contrary.

11. And whenever in any contract, agreement, or undertaking entered into between any two or more persons prior to such date, the consideration money shall have been expressed in dollars, the liability in respect of each such dollar shall henceforth be legally discharged by the payment of two rupees.

No. XIII.

Report by the Deputy Master of the Sydney Branch of the Royal Mint for the year 1876.

Sir, Royal Mint, Sydney, 19th January 1877.

I have the honour to submit, for the consideration of the Master of the Mint, my Eighth Annual Report on the Sydney Branch of the Royal Mint.

The Colony of New South Wales suffered in the early part of 1876 from a severe drought, which interfered with the operations of the gold digger, and depressed his industry. There was a considerable diminution in the productiveness of the gold fields, and a corresponding reduction in the receipts of the Mint. Less gold was also imported from other Colonies.

The quantity of gold received for coinage during the year 1876 was 431,905 ounces, amounting in value to 1,605,557*l.* Of this amount 575,564*l.* was the produce of New South Wales, 967,967*l.* of Queensland, and 54,783*l.* of New Zealand.

The coinage amounted to 1,613,000 sovereigns and 60,000 half-sovereigns. Gold bars to the value of 8,292*l.* were also issued; making the total amount of the issues 1,651,292*l.*

The amount of revenue received and paid over to the Colonial Government was 10,496*l.* The expenditure, including an extraordinary expense of 955*l.* 7*s.* 6*d.* for the renewal of the boilers and the purchase of a lathe for dressing the rollers, and 733*l.* 2*s.* 2*d.* for pensions to retired officers of the Mint, amounted to 13,385*l.* 18*s.* 4*d.* The necessity for extraordinary expenses having ceased, it is estimated that the expenditure of the current year will not exceed 12,464*l.*

A saving of 2,090*l.* 3*s.* 7*d.* on the Mint Annuity of 1875 was repaid, as usual, to the Colonial Government, according to the directions of the Lords Commissioners of Her Majesty's Treasury.

The amount of worn silver coin withdrawn from the circulation of New South Wales during the year was 4,643*l.* The sale of the bullion produced by melting this coin realised a sum of 3,054*l.* 7*s* 4*d.*, leaving a loss of 1,588*l.* 12*s.* 8*d.*, which was replaced, as usual, by drafts on the Master of the Mint.

This service was deranged for a time by the unsaleableness of the silver bullion, except at an unreasonably low price, the general depreciation of the value of silver throughout the world having destroyed the local market; but,

by holding over the silver for some time, an offer of 4*s.* 2*d.* the ounce standard was at length obtained, and accepted as reasonable under all the circumstances.

The issues of bronze coin amounted to 1,045*l.*

The renewal of the boilers was accomplished very successfully, advantage being taken of a few weeks when the demand for coin was less than usual. The new boilers, both in themselves and in the setting and other accessories, are very superior to the old boilers, and increase the effective power of the Mint with a considerable saving of fuel. One of the engines has also been thoroughly repaired, and the large driving wheel re-geared; the duplicate engine will be treated in the same manner, as opportunity serves. One of the new automatic weighing machines which never worked satisfactorily, has been taken to pieces, its defects discovered and remedied, and the machine made perfectly efficient. The acquisition of a lathe for dressing the rollers supplies a deficiency which has long been severely felt; and altogether, the machinery and plant, generally, are in the highest condition of completeness and effective order.

All the alterations and repairs (except the brickwork of the boilers) have been done by the regular staff, without any other assistance; affording another instance of the unwearied zeal and energy which every member of the establishment is ready to display when necessary.

The difficulty of obtaining oven coke of uniformly good quality, and its great expense, induced me to try whether ordinary gas coke might not be substituted for it, and the trial having been perfectly satisfactory, gas coke will be used in future for the melting and other furnaces, which will effect a saving of more than 200*l.* a year in the expense of fuel.

Charles Simmons, a senior artificer, having resigned his situation, it has not been filled up, the duties being provided for by a re-distribution of the work.

The Weigher and Balance Mechanician, and the Foremen of the Coining, of the Melting, and of the Refining Departments, having similar important duties and responsibilities, it seemed desirable to rate them as a class, at an uniform scale of salary suitable to their rank as petty officers, commencing at 200*l.* a year, and rising by an annual increase of 5*l.* to a maximum of 250*l.* This arrangement, having been approved, took effect from the 1st of July last. It will be beneficial to the establishment, not only by attaching more firmly to it useful and deserving men, but also by affording an encouraging prospect to the other workmen of possible moderate promotion as the reward of conduct and capacity.

I append a Return of the receipts and issues and revenue of the Sydney Branch of the Royal Mint from the commencement to the 31st December 1876; and a copy of the Regulations for the receipt of gold for coinage.

I have, &c.,

C. ELOUIS,
Deputy Master.

The Deputy Master,
Royal Mint, London.

(Enclosure 1.)

RETURN of the Quantity and Value of Gold received for Coinage at the Sydney Branch of the Royal Mint, of the Gold Coin and Gold Bars issued therefrom, and of the Revenue derived from Mint Charges, &c., from the opening of the Mint on the 14th May 1855 to the 31st December 1876.

Period.	Gold Dust or Bullion received for Coinage.		Issued.					Revenue.		
			In Coin.			In Bullion.				
	Weight.	Value.	Sovereigns.	Half-sovereigns.	Total Value of Coin.	Weight.	Value.	Total Value of Coin and Bullion.	From Gold, the Produce of New South Wales.	From other Sources.	Total Revenue.
	oz.	£ s. d.	No.	No.	£ s. d.	ozs.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
1855, 14 May to 31 Dec.	217,589·205	871,300 2 6	502,000	21,000	512,500 0 0	1,221·070	4,758 0 11	517,258 0 11	3,211 14 5	2,196 0 2	5,407 14 7
1856, 1 Jan. to 31 Dec.	239,491·999	959,776 6 5	981,000	478,000	1,226,000 0 0	654·850	2,549 16 5	1,223,549 16 5	8,079 14 0	4,476 19 7	12,556 4 7
1857 " "	225,215·899	879,181 19 4	492,000	537,000	767,500 0 0	14,889·830	57,977 5 7	825,477 5 7	6,001 11 11	4,839 2 11	10,840 14 10
1858 " "	348,540·530	1,332,054 3 1	1,101,500	483,000	1,343,000 0 0	14,927·920	58,125 11 10	1,401,125 11 10	13,192 12 11	4,955 12 4	18,148 5 3
1859 " "	358,127·090	1,380,402 14 10	1,050,500	341,000	1,221,000 0 0	39,591·620	156,557 5 3	1,377,557 5 3	14,651 9 2	4,321 12 1	18,963 1 3
1860 " "	470,454·590	1,823,637 16 11	1,573,500	156,000	1,651,500 0 0	45,543·520	195,052 9 2	1,846,552 9 2	16,018 6 4	5,011 3 0	21,029 9 4
1861 " "	427,607·470	1,663,632 2 6	1,626,000	186,500	1,719,250 0 0	24,880·005	98,187 0 6	1,817,437 0 6	10,000 16 8	3,567 5 5	23,568 1 11
1862 " "	696,311·580	2,760,452 1 1	2,477,500	—	2,477,500 0 0	74,206·174	298,191 14 4	2,775,691 14 4	26,805 10 3	6,001 7 13	32,806 18 1
1863 " "	403,332·110	1,608,526 17 6	1,255,500	558,500	1,534,750 0 0	84,549·690	342,212 9 10	1,876,962 9 10	18,555 6 8	5,047 6 3	23,602 12 11
1864 " "	728,019·350	2,878,598 17 10	2,698,500	—	2,698,500 0 0	44,897·291	182,168 4 8	2,880,668 4 8	14,599 0 10	12,496 14 5	26,895 15 1
1865 " "	598,690·740	2,351,402 0 10	2,190,500	282,000	2,271,500 0 0	21,812·659	88,661 15 9	2,359,561 15 9	13,053 5 9	9,777 5 4	22,830 9 1
1866 " "	750,362·550	2,935,923 7 9	2,911,000	—	2,911,000 0 0	11,113·951	44,732 8 3	2,955,732 8 3	11,784 13 5	13,226 7 5	25,011 0 10
1867 " "	629,721·990	2,507,568 19 9	2,370,000	62,000	2,401,000 0 0	22,656·215	91,853 15 3	2,492,853 15 3	10,970 15 4	10,376 7 6	21,347 3 10
1868 " "	605,896·840	2,359,625 10 1	2,319,000	—	2,319,000 0 0	6,681·244	26,728 8 1	2,345,728 8 1	8,945 13 1	10,570 6 7	19,517 5 8
1869 " "	346,063·940	1,333,487 8 3	1,202,000	154,000	1,279,000 0 0	9,936·444	40,356 2 2	1,319,388 2 2	6,001 13 1	8,086 13 2	15,088 6 3
1870 " "	317,527·960	1,218,730 4 8	1,220,000	—	1,220,000 0 0	5,985·436	23,298 1 9	1,243,298 1 9	4,607 8 11	6,962 4 7	11,570 13 6
1871 " "	778,627·200	2,887,601 16 5	2,814,000	—	2,814,000 0 0	14,489·542	56,418 13 1	2,870,418 13 1	7,318 18 3	11,570 16 6	18,887 14 9
1872 " "	553,342·450	2,083,774 12 10	1,815,000	356,000	1,993,000 0 0	25,335·527	98,728 2 1	2,091,728 2 1	6,539 19 5	8,249 5 2	17,789 4 7
1873 " "	436,624·910	1,611,946 17 1	1,478,000	—	1,478,000 0 0	13,088·428	50,963 1 5	1,528,963 1 5	7,254 16 10	5,153 7 11	12,386 18 9
1874 " "	551,046·650	2,073,966 19 11	1,899,000	252,000	2,025,000 0 0	2,982·124	11,611 12 8	2,036,611 12 8	6,725 6 9	7,389 1 5	14,114 8 2
1875 " "	547,484·680	2,061,070 16 5	2,122,000	—	2,122,000 0 0	1,678·786	6,517 6 0	2,128,517 6 0	5,774 15 10	7,830 16 1	13,605 11 11
1876 " " (A.)	431,905·270	1,695,537 19 8	1,613,000	60,000	1,643,000 0 0	2,129·789	8,292 17 4	1,651,292 17 4	5,941 8 10	6,054 15 4	10,496 4 2
Totals - (A.)	10,787,761·075	41,571,393 16 2	37,658,500	3,927,000	39,632,000 0 0	487,005·929	1,943,373 19 10	41,566,873 19 10	237,052 16 7	158,963 5 11	396,016 2 6

(A.)—Countries from which imported:

Country.	During the year 1876. Quantity. ozs.	Value. £ s. d.	Since the opening of the Mint. Quantity. ozs.	Value. £ s. d.
New South Wales	153,531·480	575,564 19 2	5,854,448·940	22,496,388 19 10
Victoria	—	—	1,437,352·525	5,004,835 2 9
New Zealand	14,245·020	54,783 13 6	1,750,260·760	6,877,753 2 10
Queensland	262,177·170	967,967 1 1	1,293,994·100	5,100,504 15 4
Tasmania	—	—	5,692·450	21,982 19 6
South Australia	211·620	799 15 10	442·290	1,711 9 6
California	—	—	2,242·930	8,671 4 6
British Columbia	—	—	218·270	844 6 8
New Caledonia	420·930	1,494 15 3	5,631·250	21,768 18 6
Coin	1,510·120	5,007 14 4	37,376·500	144,744 8 6
Totals	431,905·270	1,695,537 19 8	10,787,761·075	41,571,393 16 2

Royal Mint, Sydney,
19th January 1877.

LOUIS,
Deputy Master.

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(Enclosure 2.)

REGULATIONS for the Receipt and Coinage of Gold at the Sydney Branch of the Royal Mint.

His Excellency the Governor, with the advice of the Executive Council, has been pleased to frame the following Regulations for the receipt and coinage of gold at the Sydney Branch of the Royal Mint, in substitution of those now existing, such Regulations to take effect from the 1st day of October 1876.

1. Deposits of gold in dust or bullion will be received at the Mint for coinage daily (Saturdays and holidays excepted), between the hours of 11 a.m. and 3 p.m., on the following terms :—

In respect of gold the produce of New South Wales—

(1.) A deposit of which the standard weight is less than 1,000 ounces troy, at the rate of eightpence per ounce (standard); eight shillings being charged for any deposit under 12 ounces.

(2.) An undivided deposit of which the standard weight is 1,000 ounces and under 5,000 ounces troy, at the rate of sixpence per ounce (standard).

(3.) An undivided deposit of which the standard weight is 5,000 ounces troy, and upwards, at the rate of fourpence per ounce (standard).

In respect to gold certified to be the produce of any other Colony or country—

(4.) A deposit of which the standard weight is less than 1,000 ounces troy, at the rate of fivepence per ounce (standard); five shillings being charged for any deposit under 12 ounces.

(5.) An undivided deposit of which the standard weight is 1,000 ounces troy, and upwards, at the rate of threepence per ounce (standard).

(6.) An undivided deposit of which the standard weight is 5,000 ounces troy, and upwards, at the rate of twopence per ounce (standard).

2. Light gold coin of the realm will be received for re-coinage without any charge whatever.

3. All fine silver over and above two per cent. contained in refinable gold will be paid for at a rate to be from time to time notified in the Gazette, and exhibited at the Mint.

4. The gold will be melted, if desired, in the presence of the depositor.

5. Gold received on Wednesday evening in each week will be payable on the following Tuesday. Gold received after Wednesday will be payable on the following Tuesday week.

6. Gold bullion, in ingots or bars of any fineness, can be obtained at the Mint at 3*l.* 17*s.* 10½*d.* per ounce, standard. When the gold is required to be alloyed with silver, the silver will be charged for at the purchase rate.

ALEX. STUART.

The Treasury, New South Wales,
Sydney, 2nd October 1876.

No. XIV.

REPORT by the Deputy Master of the Melbourne Branch of the Royal Mint for the year 1876.

SIR, Melbourne, 22nd January 1877.

I HAVE the honour to submit for your consideration my Report on the Melbourne Branch of the Royal Mint for the year ending 31st December 1876.

Colonel Ward having obtained leave of absence for twelve months, took his departure for England on the 12th June. His Excellency the Governor, having concurred in Colonel Ward's recommendation that I should act as Deputy Master during his absence, I have since taken charge of the Department, and the Lords Commissioners of Her Majesty's Treasury have signified their approval of this arrangement.

It having become necessary during the year to fill up the Junior Clerkship which had been vacant since the promotion of Mr. Dillon, as notified in Colonel Ward's Report for the year 1874, a competitive examination, under regulations approved by His Excellency the Governor, was held in June last, at which two candidates competed for the appointment. Mr. E. S. Hughes, the successful competitor, was appointed on probation for six months from 1st July. Having satisfactorily served his period of probation and received a certificate of qualification from the Civil Service Commissioners, he has been finally appointed a Junior Clerk from 1st instant.

The recommendation submitted in Colonel Ward's letter to the Deputy Master and Comptroller of 30th November 1875, for the appointment of William Blackwell as Foreman of Melting, referred to in the Report for that year 1875, having received the sanction of the Lords Commissioners of Her Majesty's Treasury, as communicated in the Treasury letter, dated 7th March last, and the Civil Service Commissioners having issued a certificate of qualification in his favour, Blackwell was appointed Foreman of Melting from 1st January 1876. *

As directed in the Deputy Master and Comptroller's letter of 12th May, the sum of 5,893*l.* 1*s.* 9*d.*, the unexpended balance of the Mint Annuity for the year 1875, has been paid in to the Colonial Treasury.

The production of gold in Victoria in 1876 is estimated to have been less than that of 1875 by about 100,000 ounces; the gold received for coinage has, however, increased, having been 543,198 ounces, an increase of 53,467 ounces on the receipts of the previous year. The business of the Mint appears to be gradually extending, as the advantage of sending gold for coinage is becoming more generally appreciated. The coin issued has been 2,124,000*l.* in sovereigns, and the Mint Revenue 8,153*l.* 4*s.* 9*d.*, whilst during 1875 the coinage was 1,888,000*l.* and the Revenue 7,927*l.* 10*s.* 2*d.* The export of coin was 1,587,104*l.*, so that of the coin issued during the year, 536,896*l.* has been retained in the Colony. The expenditure for 1877 is estimated to be 13,370*l.* 13*s.* 4*d.*, being a decrease of 500*l.* on the estimate for 1876.

The gross value of the gold brought for coinage under the Mint Regulations was 2,152,711*l.* 9*s.* 8*d.*, (of which 3,230*l.* 12*s.* 8*d.* was allowed for silver) being an average of 3*l.* 17*s.* 11$\frac{5}{10}$*d.* per standard ounce. The net amount paid to depositors was 2,148,702*l.* 8*s.* 4*d.*, or at the rate of 3*l.* 17*s.* 10$\frac{15}{160}$*d.* per standard ounce.

The whole of the gold received was refined by Mr. Miller's chlorine process, the quantity of refined gold produced being 501,465·70 ounces. The amount of silver extracted was equal to 27,490·40 ounces fine, the whole of which was practically free from gold.

Standard gold bars of the weight of 867,222·94 ounces were prepared and passed into the Coining Department, from which 538,581·43 ounces of coin were returned, being 62·10 per cent. of the bars operated on. The tops of the bars are cut off in the Melting House, so that the whole quantity passed into work is available for coining. The expenditure of dies was in the proportion of one obverse for every 20,000, and one reverse for every 36,000 pieces coined. The average weight of the sovereigns was ·25682 ounce, and the average assay 916·70.

The waste of the Mint has been in melting and refining 37*l.*, and in coining 13*l.*, or a total of 50*l.* per million sterling of coin issued to the public.

Although a considerable proportion of the silver coin in circulation is very much depreciated by wear and tear, none has been sent to the Mint during the year for withdrawal. This is doubtless owing to the fact that the Mint has no stock of new silver coin from which to replace it.

See Appendix "A." A Return is attached of the quantity and value of gold received for coinage, and of the coin and bullion issued, and of the revenue derived from the Mint from its opening until the end of the year 1876.

See Appendix "B." Another Return shows the quantity and destination of gold coin exported from Victoria, and the amount issued from the Mint in each month of the same year.

I have, &c.,

ROBERT HUNT,
Acting Deputy Master.

The Right Honourable
The Master of the Mint, London.

* See Sixth Annual Report (1875), page 17.

RETURN of the Quantity and Value of Gold received for Coinage at the Melbourne Branch of the Royal Mint; of the Gold Coin and Gold Bullion issued therefrom; and of the Revenue derived from Mint Charges, &c., from the opening of the Mint on 12th June 1872 to the 31st December 1876.

Period.	Gold received for Coinage.		Issued.						Revenue.		
			In Coin.			In Bullion.		Total Value in Coin and Bullion.	From Mint Charges on Gold.	From Sale of Silver and other Sources.	Total Revenue.
	Gross Weight.	Value of Gold at 3*l.* 17*s.* 10½*d.* per oz. standard.	Sovereigns.	Half-sovereigns.	Total Value.	Quantity.	Value.				
	oz.	£ s. d.	No.	No.	£	oz.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
1872* - - -	199,738·14	764,917 6 9	748,000	—	748,000	1,205,458	5,810 9 7	751,810 9 7	2,036 10 11	1,289 6 6	3,045 6 5
1873 - - -	221,870·44	887,126 15 6	752,000	165,000	834,500	3,106,008	11,038 6 6	845,535 6 6	3,402 10 3	1,328 17 3	5,121 7 11
1874 - - -	333,317·62	1,249,101 17 3	1,373,000	—	1,373,000	2,911,722	10,516 16 6	1,385,416 10 0	4,861 14 9	1,692 17 10	6,554 12 7
1875 - - -	489,731·59	1,947,712 14 3	1,888,000	—	1,888,000	3,553,872	13,857 4 5	1,901,857 4 5	4,814 15 9	5,412 17 2	7,227 10 2
1876 - - -	545,198·39	2,149,480 17 6	2,124,000	—	2,124,000	3,625,578	14,144 10 1	2,138,144 10 1	5,960 12 4	4,163 12 5	8,125 4 9
Total (A.) -	1,789,856·38	7,008,339 11 3	6,885,000	165,000	6,967,500	14,400,642	53,925 9 10	7,020,564 0 10	19,485 16 8	12,316 11 2	31,792 1 10

* From 12th June, the day the Mint opened to the public.

(A.) Countries from which imported:

Country.	During the Year 1876.	Since the opening of the Mint.
	ozs.	ozs.
Victoria - - -	427,873·84	1,312,731·99
New South Wales - - -	202·33	1,419·63
New Zealand - - -	93,082·04	405,637·87
Queensland - - -	159·24	1,831·07
South Australia - - - -	9,646·39	34,101·81
Tasmania - - -	10,004·15	22,454·61
Natal - - - - -	288·78	734·01
Unknown - - - -	1,319·11	4,470·44
Totals	542,198·39	1,789,856·38

Royal Mint, Melbourne,
15th January 1877.

ROBERT HUNT,
Acting Deputy Master.

Appendix "B."

Return showing the Amount and Destination of Gold Coin exported from Victoria, the Amount issued from the Mint, in each Month of the Year 1876, and the Amount of Gold received for Coinage in the Year.

Month.	To where Exported.					Total Amount Exported.	Amount issued from Mint.	Excess of Sovereigns issued from Mint over Sovereigns Exported.	Excess of Sovereigns Exported over Sovereigns issued from Mint.
	Galle.	South Australia.	N. S. Wales.	New Zealand.	Tasmania.				
	£	£	£	£	£	£	£	£	£
January -	200,522	20,000	—	—	—	220,522	156,000	—	64,522
February -	72,340	20,000	80,360	—	5,000	177,900	152,000	—	25,900
March -	23,175	33,000	50,040	—	—	106,215	175,000	66,785	—
April -	124,342	75,000	20,000	—	—	219,342	111,000	—	108,342
May - -	27,625	—	20,000	80,000	—	127,625	263,000	135,375	—
June -	83,500	—	—	25,000	—	110,500	168,000	57,500	—
July - -	87,539	—	—	3,000	—	90,539	157,000	66,461	—
August -	155,900	—	500	20,000	—	176,400	128,000	—	48,400
September -	54,000	—	—	—	—	54,000	215,000	161,000	—
October -	52,804	—	450	—	30,000	83,354	154,000	160,646	—
November -	177,190	—	—	—	—	177,190	172,000	—	5,190
December -	9,017	—	1,000	30,000	—	41,517	243,000	201,483	—
Total -	1,073,154	148,000	172,350	158,000	35,000	1,587,104	2,124,000		

Royal Mint, Melbourne,
15th January 1877.

Robert Hunt,
Acting Deputy Master.

No. XV.

Extract from a Letter from Mr. E. J. Poynter, R.A, to the Deputy Master of the Mint.

"* * * * I shall be very glad to bring the subject of die engraving for coins and medals under the notice of art-students at South Kensington. I hope we may be able to induce one or two of the more promising to turn their attention to an art which is undoubtedly in want of encouragement in this country, and I should be delighted if our schools can be the means of promoting a higher class of design and workmanship. Beyond this, I do not know that we are in a position to do much that will be specially useful. Technical education is not precisely within the province of this Department, our aim being rather to provide a thorough and general education as a preparation for all classes of the fine art-industry; and the actual process of die-sinking could hardly form part of our course of instruction. A sound knowledge of the figure both in drawing and modelling (the latter of course) are the first essentials for the art of die-engraving; without these the acquisition of a good style is impossible, and it would be useless for a student to take up the technical side of the art without being as thoroughly grounded in these studies as for the production of sculpture on a larger scale.

"I am in hopes of being able to make such improvements in our modelling class as shall effectually raise it to the highest standard, and the Museum, with its excellent art-library and its collections of medals and electro-types, gives valuable opportunities to a willing and energetic student for the study of style." * * *

Edward J. Poynter,
Director for Art, and Principal of the
National Art Training Schools."

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FREE TRADE AND PROTECTION

FROM AN

INDIAN POINT OF VIEW.

A PAPER

Read at the Sassoon Mechanics' Institute on the 29th of March 1877.

47643

BY

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FREE TRADE AND PROTECTION FROM AN INDIAN POINT OF VIEW.

The subject which I have undertaken to discuss in the present paper, is one which, as many of you are doubtless aware, has recently attracted considerable attention both in this country and in England. It is a subject so intimately connected with the whole future of our country—no less in its social and political than in its industrial aspects—that it is impossible to exaggerate the importance of having correct views upon it. At the same time it is a subject respecting which a controversy has been raging for a long time, and is even now, as the late Professor Cairnes expressed it, "active and glowing with something of its pristine fervour."* I propose in this paper to present a conspectus of the various arguments, which have been or may be urged on either side of the controversy as it affects this country; and to set down some of the practical conclusions as to the true line of policy to be followed in this matter to which we are led by a consideration of those arguments.

Before entering, however, on a discussion of the conflicting views on this important subject, I think it desirable to draw prominent attention, at the very outset to one circumstance connected with it, namely, that the question

* Some leading principles of Political Economy newly expounded P. 430-51; and compare also Fortnightly Review June 1878. P 881.

as between Free Trade and Protection is not really one of pure Political Economy—not one, in other words, on which the verdict of Political Economy is final and unappealable. I venture to think, that there are few or no questions of practical politics, upon which the deliverance of Political Economy can be accepted without numerous qualifications. And it appears to me, that this must become obvious even upon a slight examination of the matter. If Political Economy is conversant, as we are told by the highest authorities it *is* conversant, with wealth alone; and if in practical life, the pecuniary aspect of a measure is, and must be admitted to be, not the sole—often not even the most important—aspect to be considered; then it seems to follow, that the economical view of such a measure is but one of many factors which must go to form the final judgment upon it. And accordingly, we find Political Economy spoken of in Mill's Autobiography, as "a branch of Social Philosophy so interlinked with all the other branches, that its conclusions even in its own peculiar province, are only true conditionally, subject to interference and counteraction from causes not directly within its scope; while to the character of a practical guide it has no pretension apart from other classes of considerations.*" The same view, has been taken by another of the great Economists of our day—I mean the late Professor Cairnes. He says: "The data thus furnished"—that is to say, by Political Eco-

* P 236 (3rd ed.). See also Mill's Political Economy, Preface. (Popular edition.); Essays on some unsettled questions of Political Economy pp. 138-9; 140-5. (1st ed.).

nomy—" may indeed go far to determine our judgment, but they do not necessarily, *and should not in practice always*, do so. For there are few practical problems which do not present other aspects than the purely economical—political, moral, educational, artistic aspects—and these may involve consequences so weighty as to turn the scale against purely economic solutions. On the relative importance of such conflicting considerations, Political Economy offers no opinion, pronounces no judgment; thus, as I said, standing neutral between competing social schemes."* And Prof. Cairnes winds up his remarks on the subject in this wise: "It supplies the means, or more correctly, a portion of the means, for estimating all, it refuses to identify itself with any." It is unnecessary, I apprehend, to further labour a point which is so clear, as well upon the reason of the thing, as upon the authorities which have been cited and which may be easily multiplied.† Some, indeed, may think, that the point should have been disposed of even more summarily than it has been here. But as Professor Cairnes has remarked in the sequel of the passage already quoted, this "characteristic of economic science" is not "at all generally appreciated, and some serious and indeed lamentable consequences have arisen from overlooking it." And what is of still greater importance, in the whole of the very elaborate discussion which the question has recently undergone with

*Fortnightly Review for July 1871 P. 93. The paper has been since reprinted in Prof. Cairnes's Essays in Political Economy. See P. 256.

†See, *inter alia*, Prof. Leslie's Essay on Financial Reform. Cobden Club Essays 2nd Series P. 193.

reference to our Customs Tariff, I am not aware of a single writer on the Free Trade side who gave its due weight to this circumstance. The great weight which is really due to it will be shown at a later stage of our investigation. At present it is enough to have drawn attention to it.

And now, with this preliminary caution, let us consider the purely economic aspects of Free Trade and Protectionism in their operation in India. The objections to Protectionism, in the abstract, may, we think, be fairly summed up as follows :—

I That it benefits the comparatively small class of producers at the expense of the consumer.

II That it prevents a country from producing as much in the aggregate as it might and could produce in the absence of the protective regulation.

III That it diverts capital from its natural channels.

IV That it renders industry unprogressive, and is demoralizing to the industrial classes generally.

V That, in principle, it is destructive of all foreign trade and the moral and intellectual benefits thence resulting.

VI That it involves the great evils of the interference of the State with Trade and Industry.

There is not, I believe, any objection to the system of protection which may not be comprehended under one or other of these six heads. We shall now proceed to consider them in their order.

And first as regards the loss to the consumer. We find

it often alleged* that to give protection to the growth of any article is equivalent to an enhancement of the price of that article. To this objection, as applied to the particular case we have now to consider, there is, I venture to think, a very conclusive reply. I do not now wish to dispute the allegation that the repeal of the import duties on cotton goods, for instance, which have been objected to as protective in their operation, will reduce the price of those goods in this country—although, having regard to what has been stated on high authority to have been the effect of the repeal of the Corn Duty in England, there may be room for doubt as to that matter.† But I will assume, for the purposes of the present argument, that such a reduction of prices will result from the repeal of the duties in question. Let us now trace the results of that measure in other directions.‡ There will be a deficiency

*Wealth of Nations Book IV ch. II; Chamber of Commerce Report (Bombay) 1874-75. P. 86; Fortnightly Review June 1876, P 889; see also Mr. Sorabji Shapurji Bengalee's letter to Lord Lytton on the Import Duties P. 3.

†See Ricardo's works (McCulloch) P. 191. Rogers Political Economy P 235; and Gladstone's Financial Statements P. 129 whence it will appear that the operation of the repeal of the Corn Laws in England was beneficial in a different mode altogether. The passage is cited with approval by Prof. Leslie; Cobden Club Essays. (2nd Ser) 236. Prof. Leslie, in that paper, couches his lance against all indirect taxation. It is more than doubtful, however, whether his *beau ideal* of taxation is practicable—in India especially. See Gladstone's Financial Statements P. 518 and Report of the Bombay Chamber of Commerce for 1875 P. 54 Journal of the East India Association VIII. 193.

‡I have been unable to resist the temptation to add the following remarks although they do not bear on the abstract question, but only apply to the case of an impost which is necessary for revenue

in the revenue of the country to the extent of the yield of those duties. How is that deficiency to be made up? Two, and only two, alternatives seem to present themselves. Either another tax must be levied, or the public expenditure must be reduced. If another tax is levied, it must be levied either from the class upon whom the import duties fell, or from a different class of the people. In the latter case, we shall have only shifted the burden of taxation from one shoulder to another; and as we must assume, at least for the purposes of this argument, that the import duties are not objectionable on the ground of their involving any inequality* of taxation, this result is manifestly unjust. If on the other hand, the tax is levied from the very persons on whom the import duties fell, the result will be simply, that the state will have taken with one hand what it had given with the other—will have taken in taxation what it had given in the reduction of the price of Cotton Goods. If we turn now to the other alternative, of economy in the public expenditure, the repeal of the import duties is simply a measure of remission of taxation. And without going very far into the question which arises with regard to that point, it may, I think, be very safely said, that there

purposes as well as protective in its operation. My excuse must be found in the fact that it is with reference to such a duty that the abstract question which I am discussing has been raised.

*In point of fact the duties will be found to satisfy most if not all of the famous canons of Taxation laid down by Adam Smith. Mr. Sórabji Shapurji is also of this opinion. See his Letter to Lord Lytton P. 6 *Et seq.* Compare also Syme's Industrial Science P. 71, where and on the following pages may be seen some very incisive observations on the late Indian Tariff Act.

are other taxes which are more proper to be remitted than these Import Duties. Our system of Land Revenue on this side of India may be good or may be bad—that question need not be discussed on the present occasion. But the evidence afforded by the Deccan Riots, and by the awful Famine now prevailing in this Presidency, must, to most minds, be conclusive to show that the Land Tax, to put it in the mildest way, has some claims to be taken into consideration when a remission of taxation is contemplated.* A similar argument may probably be urged with much force as regards the Salt Duty.† But it is unnecessary to carry this branch of the argument any further. It appears to me to be quite clear, that if *any* tax is to be remitted, the whole system of taxation must be considered, in order to see *which* tax is the fittest to be abolished. And if such a consideration is given to the question, strong argument and high authority will be found to support the case of other taxes than the tax on imports of Manchester goods.‡ How then does the case stand? Assuming that the repeal of the import duties on cotton goods will reduce

*See Report of Deccan Riots Commission P. 2; The Poona Sârvajanik Sabhâ's Report for the Indian Finance Committee (1873); Fortnightly Review April 1876 P. 526. Since this was written our new Governor has expressed his opinion on this subject in the course of his reply to an address presented to him by the Poona Sârvajanik Sabhâ. Sir R. Temple holds out no hope of reduction in the Land Assessments, as he is satisfied about the care with which the settlement has been made. Is His Excellency aware of the late Mr Havelock's experiment?

†Report of the Bombay Chamber of Commerce 1874-5 P. 109; Fortnightly Review April 1876 pp. 521-8.

‡Report of the Bombay Chamber of Commerce 1874-5. P. 97.

the cost of those goods to the Indian consumer, we find that such reduction will either be counterbalanced by some additional payment in another direction, or will lead to some injustice in the general system of taxation in the country, or will cause an alteration of that system, which having regard to the interests of the people of this country, is by no means the most expedient. Of course, as I need scarcely say, I am now assuming—what at this stage of the argument must necessarily be assumed—that there is no other objection to the Import Duty than that which we are now discussing. And on that assumption, the results to be expected from the repeal of the Duty, as just now pointed out, seem to me to militate against that repeal.

But the Protectionist case, if it is to be so called, in answer to this objection in the interests of the consumer, does not rest there. Assuming that the Import Duty does increase the cost of the goods liable to it, and further assuming that against such increase there is nothing to show on the credit side of the account, it may well be contended that the assumed increase will only last for a short time, and that the privations endured during its currency will be made up for, and more than made up for, by a large diminution of cost afterwards. Admitting for the nonce, that the objection we are now considering is unanswerable in the case of a country altogether unsuited to the manufacture of the goods liable to duty, it appears to me to be utterly devoid of force when applied to a country in many ways adapted to that manufacture. A concrete example will

make this quite clear; and the example of the cotton manufactures in our country is as good a one as any. Now we may admit, that the import-duties on Manchester goods having kept their price at a high level, the Indian consumer is at present paying something more for them than he would have had to pay but for the levy of those duties. So far there is a clear loss to the consumer. But on the other hand, it must also be admitted, that in many ways this country is even better suited to the manufacture of cotton goods than England. The raw material is several thousand miles nearer; the labour required is enormously more cheap;* and even the coal that may be necessary is not inaccessible.† If then you have the capital and other requisites necessary to start the industry fairly, so as to bring the manufacture into full working order, without being nipped in the bud by losses or infinitesimal profits at the very beginning, it appears to me to be plain, that in such a case the price of the goods must ultimately be much reduced. Upon the abstract principles of Political Economy, this conclusion appears to be a necessary one in the case put. But we are not left entirely to an *a priori* argument in this case. In 1873 there was published in the Fort-

*In saying this, I do not forget that cheap labour is not necessarily or always the most profitable. But even taking note of all that is involved in this admission, the circumstance referred to in the text is one entitled to some weight on the question discussed. See on this point the Report of the Bombay Chamber of Commerce for 1874-5 P. 54. and Brassey's Work and Wages pp 69, 87.

†Compare Report of the Bombay Chamber of Commerce 1874-5. P. 54. and Journal of the East India Association VIII. 128.

nightly Review an article by Mr. David Syme, in which two or three very striking instances are given of how the levy of a protective duty on certain articles in the United States and in France ultimately reduced the prices of those articles—so much so, that instead of importing them as they had done before the laying on of the protective impost, the United States and France were able to assume the position of exporters of those commodities, and the United States, indeed, were able to undersell even England herself.* To my mind, I own, this is quite conclusive. Both *a priori* reasoning, and the experience already gained in other countries,† lead concurrently to the conclusion, that in a country adapted to any manufacture, a protective duty, although it may in the first instance raise the cost of the manufactured article, must in the long run reduce the cost. And if this is so, can the objection we are now discussing be maintained? Can it be said that protection under such circumstances means injustice to the consumer? It is one

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*Fortnightly Review April 1873. pp 449,450,451. Compare also Mr. Syme's Outlines of an Industrial Science pp 87-8. What has been stated in the text also furnishes matter for consideration as against the contention of the Chairman of our local Chamber of Commerce, that "no law can be laid down with greater certainty than that if you protect the manufactures of a country by protective tariffs, its export trade in these manufactures will wither and die." (Chamber of Commerce Report for 1874-5, P. 87).

†Our own cotton manufacture shews a substantially similar result; for although our indigenous machine-made coarse cloths are not yet, I believe, cheaper in money cost than Manchester cloths, still considering their greater durability, it is in the long run cheaper to buy them than the cloths imported from Manchester. Compare Syme's Industrial Science P. 170.

of the characteristics of civilised life, as contrasted with the primitive condition of mankind, to forego a small present good, or even to suffer a present privation, in the hope and with the intention of thereby securing some larger advantage in the future. Is it not clear, then, that in such a case as that we have put, the true interests even of the consumer dictate a policy of Protectionism instead of Free Trade?

And this view of the subject enables us to perceive, that the apparently formidable dilemma put forward on behalf of Free Trade is quite innocuous. "To give the monopoly"—says Adam Smith, in a passage of the *Wealth of Nations* which Dugald Stewart has pronounced to be "satisfactory and conclusive"*—"to give the monopoly of the home market to the produce of domestic industry in any particular art or manufacture, is in some measure to direct private people in what manner they ought to employ their capitals, and must, in almost all cases, be either a useless or a hurtful regulation. If the produce of domestic can be brought there as cheap as that of foreign industry, the regulation is evidently useless. If it cannot, it must generally be hurtful."† The earlier portion of this passage appertains to our next point. But if we look into the alternatives presented to us at the close of it, we shall find that they by no means exhaust the possibilities of the case. And our preceding

*Lectures on Political Economy-Works edited by Hamilton Vol IX. P. 24 note.

†Wealth of Nations Book IV chap II.—Vol III. P. 113 (Wakefield's edition)

observations will indicate the third alternative—namely that the produce of domestic industry may not at a particular point of time be able to compete with that of foreign industry, but may reasonably be expected to be able to do so after a short period, if in the meantime it receives suitable help and opportunities of development. In a case like this,* Adam Smith's argument, I venture to think, has but little force.

Upon the whole, therefore, this first objection to Protectionism in India appears to me to fail, because the principles upon which it rests do not quite square with the actual circumstances of this country. Let us now proceed to consider the next objection, which is that Protectionism tells unfavourably on the aggregate production of a country. This objection is thus stated by Adam Smith in the passage† to which we have already referred. "If a foreign

*On re-reading Chap. II of the Fourth Book of the Wealth of Nations, I find that this case has not altogether escaped the attention of its great author. But I venture to submit, that the manner in which he disposes of it is not quite satisfactory, for he does not fully work out the results of the hypothesis which he accepts as not unlikely. He says: "By means of such regulations, indeed, a particular manufacture may sometimes be acquired sooner than it could have been otherwise, and after a certain time may be made at home *as cheap or cheaper* than in a foreign country. But though the industry of the society may be thus carried with advantage into a particular channel *sooner than it could have been otherwise*, it will by no means follow that the sum total either of its industry or of its revenue, can ever be augmented by any such regulation." I have said in the text, upon this and on the next point, what appears to me to be worthy of consideration against the views here expressed. Smith's admission, however, that we may by protective regulations acquire a valuable industry sooner than we can without them, is not without value.

†Wealth of Nations Book IV Chap. II. (Vol. III. P. 114. Wakefield's edition.) This passage is also cited by Stewart, Works IX. 25.

country", says he, "can supply us with a commodity cheaper than we ourselves can make it, better buy it of them with some part of the produce of our own industry, employed in a way in which we have some advantage. The general industry of the country being always in proportion to the capital which employs it, will not thereby be diminished, ... but only left to find out the way in which it can be employed with the greatest advantage. It is certainly not employed to the greatest advantage, when it is thus directed towards an object which it can buy cheaper than it can make. The value of its annual produce is certainly more or less diminished, when it is thus turned away from producing commodities evidently of more value than the commodity which it is directed to produce: according to the supposition that commodity could be purchased from foreign countries cheaper than it can be made at home." Here again, I have no quarrel with the argument so far as it goes. What I contend is that it does not go far enough into all the possible circumstances; and the conclusion to be derived from it must, therefore, be taken, not in the general form in which it is inaccurately put, but subject to qualifications. The third alternative which we have mentioned in the discussion of the preceding objection is of great moment here also. Considered in the abstract, it is, I think, impossible to say, that the total production, in the case we have put, will necessarily be diminished, if we take for the application of this test a period of time in which both lines of policy have had a fair trial. If on the one hand it cannot be

denied, that in the beginning the production must be diminished; it seems to me on the other hand to be equally undeniable, that after the protection has had fair time to put forth its fruit, the production, in the case we have put, will regain its former extent, and may even be developed into still larger proportions.*

It is unnecessary to dwell further on this topic, and we therefore proceed to the next objection. "The sole effect," says Ricardo,† "of high duties on the importation, either of manufactures or corn, or of a bounty on their exportation, is to divert a portion of capital to an employment which it would not directly seek. It causes a pernicious distribution of the general funds of the society—it bribes a manufacturer to commence or continue in a comparatively less profitable employment." Now there is one point worthy of notice concerning this alleged diversion of capital, which will have to be discussed when we examine the last of the objections to Protectionism set out above—namely that based on the evils of State interference with trade. At present we have only to consider the point as regards the diversion of capital into "comparatively *less profitable*" channels. Is there any basis for this allegation as applied to our country? During the elaborate and protracted discussions on the repeal of the Import Duties on Manchester goods, I have no recollection of having met with a single fact or figure adduced to show, that any diversion of capital has taken

*Compare Fortnightly Review April 1873 pp 449-57.
†Ricardo's works (Ed. by McCulloch) P. 189.

place in consequence of the protection alleged to be afforded by the Duties in question. In truth, those who took part in the interests of free trade in that discussion did not care apparently to go into any inquiry in this direction. They asserted that the duties were protective, and—thought that they had done enough to condemn them ; thus showing themselves to belong to that class of the disciples of "the founders of Political Economy," who, in the words of the late John Stuart Mill,* "stop short at their phrases," who "believe themselves to be provided with a set of catch words, which they mistake for principles—free-trade, freedom of contract, competition, demand and supply, the wages-fund, individual interest, desire of weath &c.—which supersede analysis, and are applicable to every variety of cases without the trouble of thought." These weighty words, I venture to think, describe only too truly the mode in which the question of the repeal of the Import Duties was dealt with in the discussion to which I have referred. And yet, as I have endeavoured to point out, if we employ a little analysis, we find, that the fundamental principles, on which the general condemnation of Protectionism rests, have no place under the actual circumstances of this country. Now it has been pointed out by Mr. Raynsford Jackson, in his paper on "India and Lancashire" contributed to the Fortnightly Review,† that about the close of the year 1875, no less a sum

*See Dissertations and Discussions Vol IV. 86. Compare also the quotation there given from Professor Leslie and the note thereon at P. 87; and Fortnightly Review for July 1871, P. 90 (Cairnes's Essays P. 251.)

† For June 1876. P. 879.

than three crores and eighty lakhs of Rupees had been invested in Cotton Factories at work in Bombay. These figures are taken by him from the Bombay Government Gazette, and they are corroborated by the detailed statement on the subject to be found in the Report of the Bombay Chamber of Commerce for 1873-74.* The figures, therefore, being trustworthy, it might have been expected that some facts would be adduced to show, that this large amount of capital had been diverted from some more profitable industry. We might fairly have expected from the practical business men who discussed this question, that they should have referred to some industries, more productive and more profitable to the country, which had been starved by reason of the protective import duty having diverted capital from them to the Cotton Factories. What, however, are the facts? I find no trace of any attempt to deal with the question in any other than the "high *a priori*" method. The Bombay Chamber of Commerce does not make any reference whatever to this point. And the Manchester Chamber thinks it sufficient to assert, in the memorial addressed by it to Mr. Gladstone, who was then Prime Minister, "that the *inevitable tendency* of any trade nursed and fostered by protection is to divert capital and labour from the natural channels into which they would otherwise be more beneficially turned."† When a gentleman like Mr. Hugh Mason, speaking on behalf of the Manchester

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* P. 41-4.

† Report of the Bombay Chamber of Commerce 1873-4. P. 30.

Chamber of Commerce, in a matter so vitally affecting some of their dearest interests, can find nothing better than "inevitable tendencies" to press into his service, we may be pretty sure, I think, that there are no facts or figures to support his case. And yet if we are to argue the matter *a priori*, it appears to me, that, in the circumstances of our country, the assumptions which underlie the reasoning of the adherents of Free Trade on this point are many of them quite baseless. As Professor Cliffe Leslie has said of Political Economists generally, "they have feigned an unimpeded pursuit of wealth, a universal knowledge of the gains and prospects of every occupation in all places, and a perfect facility of migration; and from these fictions they have reasoned with exactly the same certainty as if they were real cases. The result is that Political Economy has become a byword for hasty assumptions and bad generalization."* In this country, where every thing is so liable to become stereotyped by custom,† where there is so little knowledge both of the real resources of the country, and of the proper modes of developing those resources, where there is not a superfluity of enterprise, I think that a diversion of capital, even when it is proved to have taken place in consequence of a protective impost, is not necessarily a diversion from a more profitable into a less profitable channel, cannot always be correctly looked upon as involving a loss to the country. Now in the case before us, not only is there no evidence to show any such "pernicious" diversion

* See the Academy. April 10, 1875. P. 364.

† Compare, upon this point, the observations of the late Mr. Bagehot in the Fortnightly Review for May 1876-P. 737.

whatever, but there are facts which tend to prove, that a considerable portion of the capital employed at present in the cotton manufacturing industry was altogether unemployed in any production—some of it was not in fact capital, strictly speaking—before that industry came into existence. I need scarcely say, that not having any precise figures before me, I make this statement with some little diffidence; but I have obtained information from certain friends, very well-informed in such matters, which thoroughly bears out that statement. It appears that in former times, before banking had reached its present development, the great native merchants in Bombay used always to keep large balances in hand for the purposes of their trade, so that money might be forthcoming at any time when it was required. The methods of business having now altered so as to dispense with the necessity of keeping in hand such large balances, a great portion of the capital which used formerly to remain in that form has now gone to make up the capitals of our Mills. Is this, or is it not, a desirable state of things? It appears to me, that except for the fact that business is not under this system quite so safe as it was under the previous system, this result is by no means to be deprecated. So much wealth which before was not productively employed, is now employed for purposes of production. The aggregate production of the country, therefore, must have increased to the extent of the outturn of this additional capital. True, it may be said, that if this protective impost had not existed, this capital

would have gone to the support of some more profitable industry than the cotton manufacture. This may be said. But *a priori*, I venture to think, that, having regard to the circumstances which have been noted before, it may be contradicted with equal show of reason. The truth is that we cannot really predicate what would have become of this additional capital but for the protective duty. Another important point connected with this matter is the circumstance, which I also learn from information, that a considerable quantity of the Government Paper formerly held by our merchants has found its way to the Native States—so that the wealth, which remained formerly in the coffers of some of our Native Princes, having been received by our merchants in Bombay, in lieu of their Government Paper, has now gone to replenish the capitals of our Cotton Factories. Here again, we see another mode in which the working capital of Bombay has received a clear addition. So much wealth which had remained idle in the hands of its possessors—idle, I mean to say, so far as any help to the actual production of the country was concerned—has now been turned into capital employed in production and going to the support of the labouring classes. These facts,* if they are facts—and I have them from men of business on whom I can throughly rely—seem rather to point to a state of things not entirely squaring with the *a priori* views of the dogmatic Free

*I also believe, that there has arisen so much faith in the cotton manufacturing industry, that the hoardings of some people have seen the light in consequence of this new industry being established among us.

Traders, if I may venture so to call them. And they show the correctness and strong applicability to our country of a remark of Mr. Syme's, made in the paper to which I have already referred. "We are aware", he says, "that this latter advantage is considered to be an illusory one, as capital and labour, it is alleged, would only be diverted from one industry into another, without any real benefit to the country. To this we answer, first, that this objection would have no force whatever, unless the *whole* capital and labour of the country were already fully and remuneratively employed, a supposition never yet realized in any country"*—and, I may add, perhaps least realized in India.

To look at the matter now from another point of view. I am unable to get access to any figures exhibiting the actual aggregate production of the Presidency of Bombay, for some years before, and some years after, the rise of the cotton manufacturing industry.† But the figures for the imports and exports of all the three Presidencies are available, and so far as they furnish a proper basis for argument, certainly do not afford any support to the Free Trader's views. I take the figures in the following table from the Statistical Abstract concerning India (Number Two)—for the our years just preceding the period when the cotton industry having been established in Bombay, the import duty began, it is alleged, to act as a Protective duty.

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*Fortnightly Review. April 1870 P. 457.

†Compare Mr. Dadabhai Nowroji's paper on the Poverty of India Journal East India Association IX. P. 237. *et seq.*

	Bengal.	Madras.	Bombay.
Imports 1857-60.	14,172,485 £.	2,540,739 £.	11,895,060 £.
	14,960,502 £.	2,253,096 £.	13,609,467 £.
	16,156,427 £.	2,638,400 £.	15,750,823 £.
	20,717,598 £.	3,000,846 £.	16,903,659 £.
Exports 1857-60.	13,443,967 £.	2,407,906 £.	10,740,004 £.
	13,579,431 £.	2,665,920 £.	12,033,123 £.
	14,515,988 £.	2,224,654 £.	13,791,696 £.
	12,903,770 £.	2,492,156 £.	13,493,284 £.

This yields, for the annual average of imports into Bengal during the period in question, £16,501,753; into Madras £2,608,270; into Bombay £14,539,752. And the average of exports similarly is for Bengal £13,610,776; for Madras £2,447,681, and for Bombay £12,514,527. Turn we now to the averages after the establishment of the cotton factories. I take the figures from the Statesmans' Year Book, which is based upon official documents. And I omit the years 1864, 1865, 1866, which are exceptionally favourable to Bombay. I also omit 1867, as the returns for that year give the figures only for 11 months, owing to the change of the financial year then introduced. The figures now stand as follows :—

	Bengal.	Madras.	Bombay.
Imports 1868-71.	21,840,163 £.	3,681,869 £.	20,476,046 £.
	21,321,371 £.	4,104,692 £.	24,128,314 £.
	19,496,082 £.	4,086,478 £.	22,232,435 £.
	18,588,706 £.	4,032,341 £.	15,708,938 £.
Exports 1868-71.	20,066,698 £.	4,302,763 £.	25,528,619 £.
	21,367,819 £.	6,114,041 £.	23,770,307 £.
	20,971,821 £.	6,072,375 £.	24,690,819 £.
	23,455,045 £.	5,150,725 £.	26,404,761 £.

We get the averages from this table as follows :—For Imports—Bengal £20,311,580 ; Madras £3,976,345 ; and Bombay, £20,636,433. And for exports—Bengal £21,465,346; Madras £5,409,976 ; and Bombay £25,121,126. These averages are contrasted with the previous ones in the following table :—

	Bengal.	Madras.	Bombay.
Imports during 1857-60	16,501,753£.	2,608,270£.	14,539,752£.
Do. Do. 1868-71	20,311,580£.	3,976,345£.	20,636,433£.
Advance.	3,809,829£.	1,368,075£.	6,096,681£.

	Bengal.	Madras.	Bombay.
Exports during 1857-60.	13,610,776£.	2,447,661£.	12,514,527£.
Do. Do. 1868-71	21,465,346£.	5,409,976£.	25,121,126£.
Advance.	7,854,570£.	2,962,315£.	12,606,599£.

Now these appear to be rather remarkable figures. And the lessons they teach, whether they may or may not be fairly prayed in aid of the view I am propounding, certainly negative some of the *a priori* assertions which have been made in the course of this controversy. Speaking in round numbers, we find from these figures, that during the regime of Protectionism in Bombay, our imports have developed so, that instead of being about two millions sterling short of Bengal, we are now ahead of her in that branch of commerce by more than three hundred thousand pounds. Similarly in exports. Whereas before 1860, our average fell short of that of Bengal by over a million sterling, after 1868 we beat Bengal by nearly four millions. And *mutatis mutandis*

these remarks apply in the comparison between Bombay and Madras. If we look at the percentage of advance in the three Presidencies, we still find nearly as good results for Bombay; for whereas the development of Bengal Imports shows, speaking roughly, an advance of about twenty-five percent, that of Bombay is about forty-two per cent. Madras, no doubt, shows a higher percentage—about fifty two per cent.* So of exports. While Bengal advances only fifty per cent, our exports are very nearly doubled as are also those of Madras. And on the other hand, looking at the absolute extent of progress both in imports and exports, our advance is greater not only than that of Bengal and Madras taken separately, but even of them both put together. One further remark deserves to be made. The great development which we have been here contemplating is much more striking in the case of the exports than of the imports. If we look at the figures, we find, that whereas we are in advance of Bengal and Madras put together to the extent of two millions and upwards in the department of exports, we are only about nine hundred thousand pounds beyond them in the department of imports. Now this is very noteworthy, with reference to the allegation made by the Free Traders, regarding the "inevitable tendency" of Protectionism and so forth. For a necessary condition of a vast increase of exports is an increase of the aggregate production—which is exactly the

* It should be noted here, however, that the aggregate imports and exports of Madras look almost insignificant by the side of those of Bombay and Bengal.

thing that Protectionism is alleged to prevent. Upon the whole, therefore, the general figures of our Import and Export Trade do not afford the slightest support to the dogmatic Free Trader's views. They show that Bombay with her Protectionist system has not gone to rack and ruin, but has been exhibiting, on the contrary, a striking development, so striking, indeed, as to throw into the shade the development of at least one of her sister Presidencies, who are breathing "the free and bracing air of Free Trade."*

There is another mode of comparison which may be adopted, and which also yields results not inconsistent with those which we have now seen. The tables above set out give us the averages of imports and exports of the three Presidencies in 1857-60 and 1868-71. Let us compare these averages

*Mr. Brassey (Work and Wages P. 60) says that "in a country in which the erroneous policy of protection is still adopted by the Government, the price of labour from the increased demand for it, will advance, as might be expected, in a still more rapid ratio than in a country in which a free trade policy is adopted. The closing of the home markets in Russia to foreign trade is producing a sensible effect on wages and the cost of living." Now if this is so, it seems to me, that even if Protectionism did diminish the aggregate production of a country, it would still be desirable, in a country like ours, in order to secure a fair distribution. After all, it does not do much good to a country to have a few bloated fortunes in the midst of a dead level of indigence here and there chequered with squalid misery. It is better, I humbly conceive, to have fewer large fortunes if the population at large be at the same time removed above the reach of starvation and misery. I cannot say whether there has been observed in India any such phenomenon as Mr. Brassey has noted about Russia. In the absence of figures, I am unable to say any thing more than that I have been informed that wages have risen to some extent all over this Presidency during the last few years.

with the like averages for the years 1846-49. To arrive at these averages I take the figures as given in Mr. Montgomery Martin's History of British India.*

	Bengal.	Madras.	Bombay.
Imports 1846-49.	6,22,36,232 Rs. 6,64,96,716 Rs. 5,41,85,848 Rs. 5,77,06,235 Rs.	1,02,22,110 Rs. 1,02,90,085 Rs. 1,10,83,174 Rs. 1,06,52,712 Rs.	4,33,76,038Rs. 4,15,79,118Rs. 4,04,36,062Rs. 5,71,34,128Rs.
Exports. 1846-49.	10,10,27,551 Rs. 9,51,97,977 Rs. 8,86,69,282 Rs. 9,81,97,424 Rs.	1,47,69,816 Rs. 1,58,43,167 Rs. 1,49,15,589 Rs. 1,94,63,112 Rs.	6,26,49,653Rs. 4,96,51,927Rs. 4,37,99,479Rs. 6,86,21,907Rs.

The averages yielded by these figures are contrasted with those which we have already arrived at in the following table :—

	Years.	Bengal.	Madras.	Bombay.
Imports.	46-49	6,01,56,258Rs.	1,05,63,258Rs.	4,56,31,337Rs.
	57-60	16,50,17,530Rs.	2,60,82,700Rs.	14,53,97,520Rs.
	68-71	20,31,15,800Rs.	3,97,63,450Rs.	20,63,64,330Rs.
Exports.	46-49	9,57,73,058Rs.	1,62,47,921Rs.	5,61,80,741Rs.
	57-60	13,61,07,760Rs.	2,44,7,6610Rs.	12,51,45,270Rs.
	68-71	21,46,51,710Rs.	4,90,92,760Rs.	25,12,11,260Rs.

Now these figures show, that in the case of all the three Presidencies, the advance of imports in the third period beyond the second was not so great as in the second period beyond the first. But whereas the excess in the case of

* See the table at the end of the book. Mr. Martin gives the sums in Rupees; and in the second table, therefore, I have reduced the Pounds sterling to Rupees at 10 Rs to the Pound sterling.

Bengal imports falls from 10 to 4 crores, speaking in round numbers, in the case of Bombay it falls from 10 to only 6 crores. The fall in the case of Madras is not nearly so much. The results therefore to which the figures for the imports point, in this comparison, are not different from those which we derived from the comparison we have instituted before. In the case of the exports, the advance throughout is greater in the third period than in the second. And the Presidencies of Bengal and Bombay have had a pretty nearly equal development; the extent of advance in the third period beyond the second being very nearly double the extent of advance in the second period beyond the first. And here again Madras is still far behind her sister Presidencies in the absolute total of her exports, but beats them both in the rapidity of her advance. For whereas the difference between the first two periods is only one of eighty lakhs of Rupees, the difference between the last two periods is not less than two crores and forty five lakhs of Rupees—or a little over three times the former amount. Upon the whole, therefore, the results of this comparison coincide pretty nearly with the results which we have arrived at already ; and they show that the decline, where it exists, is common to Bengal, Madras, and Bombay, that Protectionism has not done any such harm to our Presidency as has not also befallen her sister Presidencies, although they have not been under a Protectionist regime.

There is, of course, one obvious criticism on these figures, and the results we have deduced from them.

Who shall say, it may be asked, that but for the system of Protectionism prevailing here, the development would not have been even more striking? Who, indeed, shall say that? I can only echo the question. I am not prepared to answer it. But I beg to point out, that no grounds can be shown for holding to any such belief as is indicated in the question; and on the other hand, the logic of facts is rather against such belief. The *a priori* argument on the point, besides its intrinsic defects, has been shown above to take no account of certain circumstances of great moment in this inquiry. From the facts as we actually witness them, no argument can be derived in favour of such a belief. On the contrary we have the fact, that in the Protectionist Presidency the advance of both the Import and Export Trade has been far more striking than it has been in at least one of the other Presidencies which are not Protectionists. And under these circumstances, I think I am justified in altogether declining to launch upon the sea of speculation to which we are directed by the question above propounded.

The dip we have now had into this stream of figures and tables has, perhaps, rendered us oblivious of the point at which we had left our subject. But we must now return to it. We have pointed out, that such diversion of capital as may have occurred—if any diversion has occurred—by reason of the protective Import Duty on Manchester Goods, need not necessarily have been a diversion into an unprofitable channel. And we have also endeavour-

ed to show that the available statistics of our trade and commerce do not negative that assertion. As regards one department of industry—and that the principal one in this country, namely agriculture, we may add to what we have already stated, the opinion of a very competent judge, General. W. F. Marriott. In an address on Indian Political Economy and Finance before the East India Association in London, he said: "whilst India thus purchases more produce from abroad, there is no reason to suppose she produces less at home ; but the contrary. More land is taken into cultivation, and in Bombay, certainly, Manufactures have sprung up which did not exist previously."* General Marriott's mind, evidently, has not been worked upon by the bugbear of diversion of capital into unprofitable channels.† His statement, too, I may add, receives corroboration from the recently published and highly important Report of the Deccan Riots Commissioners. That Report, no doubt, is conversant only with a particular *portion* of the Presidency. But, I think, we are safe in taking their remarks as applying with small limitations, at all events on the point before us, to the *whole* Presidency. After setting out some figures for the years 1854, 1864, 1874, the Commissioners say: "In noting these figures, it must be remembered, that during the latter part of the period embraced, there was but little unoccupied waste, and the

* East India Association Journal VIII. P 207.

† Yet the gallant General is no Protectionist. See East India Association Journal VIII. 136.

increase in Sowkar holdings implies a corresponding decrease in those of the cultivating class."*

In now continuing our argument on the point before us, we shall assume—what we have shown to be not the fact—that the Import duties have caused a real diversion of capital into less profitable channels. And we think, that even after this assumption, the protective duty would be still defensible—upon the principle which has been already more than once mentioned. Upon this point, Mr. J. E. Thorold Rogers, in his book on Political Economy, asks—"What should we say of a farmer who starved his best land in order to try experiments on a rocky waste?"† Well I may say, that this will probably be a piece of folly; although I venture to think that, under certain circumstances, it will not only be a proper thing to do, but one of a class of things without which progress of any sort would be almost impossible. But however that may be, it seems to me quite plain, that this question, which Mr. Rogers apparently puts forward as a clincher, is absolutely pointless in the case we have already put. If there is any reasonable chance of making a piece of land productive,—not necessarily in the immediate future, it is quite enough if it can be made productive within a reasonable period—then I should say, that the farmer of whose holding such land formed part would not only be justified, but would be wise, in trying experiments upon it. He would be wise in looking

*P. 33.
†Polit. Econ. P. 230

upon the certainty of a smaller immediate outturn as dust in the balance, when set against the great likelihood of a larger aggregate outturn in the not very distant future.

We shall now proceed to the next objection—namely, that Protectionism is demoralizing, and a clog on industrial progress. Upon this point, the late Professor Cairnes has written as follows: "When once the industrial classes of a country have been taught to look to the legislature to secure them against the competition of rivals, they are apt to trust more and more to this support, and less to their own skill, ingenuity, and economy, in conducting their business. The inevitable result is that industry becomes unproductive wherever it is highly protected."* And further on he observes, that Protection "vitiates the industrial atmosphere, by engendering lethargy, routine, and a reliance on legislative expedients, to the great discouragement of those qualities on which, above all, successful industry mainly depends—energy, economy, and enterprise."† I do not for one moment wish to take from the force of these observations. They are entitled to great weight. But I cannot help thinking, that when Professor Cairnes wrote them, he had present to his mind only the case of Protection to manufactures already established; and not, at least with sufficient distinctness, the case put by Mill in the well-known passage to which Prof. Cairnes considers his own

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*Some Leading Principles of Political Economy &c. pp 483-4
† Ibid P. 487.

remarks to be a reply.* A distinction must, I think, be taken here between the case of an industry to be newly established, and the case of an already established industry to be maintained. In the former case, there is no doubt scope and opportunity for that "skill, ingenuity, and economy" in the conduct of business, on which Professor Cairnes lays such great and not undeserved stress. But where the industry is still unestablished, where an experiment is to be made to see whether it will take root and grow, in such a case, Mr. Mill's dictum is far more correct than Prof. Cairnes seems to think. From Mr. Mill's express words themselves, it is manifest that the latter was the only case he contemplated. And with regard to the vast majority of manufacturing industries, we are in the very position supposed by Mr. Mill. The cotton industry, it is true, has been established for some time; but unluckily a large portion of the capital embarked in it has confined itself to the comparatively less eligible localities—being centred in Bombay instead of spreading over the cotton districts.

And even with regard to established industries, I think there may be circumstances worthy of consideration

* Ibid P. 484. n. Prof. Cairnes in this note quotes, as supporting his view, a remark of Mr. Wells to the effect, that no representative of any protected industry has ever proposed or even without grumbling submitted to a reduction of the protective Tariff. This may be very true. But it does not follow, that this was done because the Protection *could* not be dispensed with. There is another, and, I humbly think, a more correct, mode of explaining the conduct of these persons—they did not wish their profits to be reduced as they would be by the competition following on the reduction or repeal of the Protective impost.

as limiting the applicability and force of Professor Cairnes's remarks. I do not think, that there need be any demoralizing effect upon the industrial classes, where the protection is avowedly given in order to allow an industry the opportunity of taking root, and where it is clearly understood, in accordance with Mill's limitation, that the protection is to be temporary only. Protection in such a case, and with such limitations, need not necessarily be demoralizing at all. The example which Professor Cairnes adduces does not appear to me to be conclusive upon the point. And I suspect that Protectionism in France, to which Professor Cairnes alludes, was based rather upon the "Theory of the Balance of Trade", as Professor Cairnes calls it,* on the idea that the precious metals were the only wealth. The ground upon which Mr. Mill bases his dictum† and the

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* Some Principles &c. pp 451,452,454.

† Prof. Cairnes (Some Principles &c. p 484) thinks that "Protection invariably begets a need for protection." We have endeavoured to point out how this does not follow from the circumstance from which Prof. Cairnes seeks to deduce it. And *a priori* it seems to me, that the "need for support" cannot arise, where the support given is given under well understood limitations. Besides, if Prof. Cairnes's broad proposition were correct, it might be argued by parity of reason, that the newborn child should not be supported in walking—for does not support beget the need of support? But that is a position which, I apprehend, will not be accepted even by Mr. Herbert Spencer, whose views on these matters go, I believe, further than those of any other thinker. I may be, perhaps, permitted to add also, that if Prof. Cairnes's propositions about Free Trade are to be understood as universal, as applying to every society in whatever stage of civilization, it is difficult to see a logical halting-place between his doctrine and Mr. Spencer's doctrine of "specialized administration", which nevertheless Prof. Cairnes rejects. This point is referred to further on in the text.

ground, I may add, upon which we ask for the benefit of that dictum—is another and very different one. Nor am I prepared to attach much weight to the argument, that under a system of Free Trade there is greater inducement to the artizan to invent new modes of economising labour. Although the argument is not without force, I do think, that in this country, where the principles of the working of machinery are so little understood, where there is so little familiarity with any of the sciences which are practically applied in the working of that machinery, the argument may easily be pressed too far.* Upon the whole, I cannot but think, that the principle of self-interest, on which the Free Trader so much relies, coupled with the certainty that the protection will cease within some short time, and coupled also with internal competition, would, in the circumstances in which we are placed, afford all the necessary stimulus to the exercise of that "skill, ingenuity, and economy, in conducting business" of which Prof. Cairnes speaks. And I do not feel at all sure that freedom of trade will really give any more.

We next come to another count in the indictment against Protectionism, namely, that in principle it is destructive of all foreign trade. Professor Cairnes says:—"Consistently carried out, Protectionism would put an end, if not to all foreign trade, at least to all such as furnished us with commodities capable of being produced in the protected

* Compare on this point Prof. Huxley's remarks. Lay Sermons P. 62 *et seq* and Mr. Brassey's Work and Wages P. 122.

country; for the essence of the doctrine is to encourage native industry, by excluding the produce of foreign industry, wherever these come into competition with commodities which native industry can produce."* And Mr. Macdonell in his Survey of Political Economy goes a step further, and observes: "Foreign trade and home trade are advantageous on the same ground, and if it be economically hurtful to have free trade between France and England, it is hurtful to have free trade between Edinburgh and Glasgow, or for that matter, to have free trade between one street and another. Diogenes living in a tub, dependent on no man, is the model and only consistent Protectionist."† Mr. Macdonell's *reductio ad absurdum* is probably capable of answer even on the extreme Protectionist theory. But we shall not dwell on that aspect of the subject. We have but one reply to both Professor Cairnes and Mr. Macdonell on this point. The doctrine of Protectionism, with the limitations with which we accept it, does not lead logically to the destruction of all trade—be it foreign trade, or home trade. Our doctrine only sets itself against perpetuating the results of an accident, where those results are in the long run less beneficial than might be obtained but for the accident. Whatever the benefits of trade, for instance, between England and India, I apprehend that it will not be contended by such writers as Professor Cairnes or Mr. Macdonell, that that trade should, in the interests of the

* Some principles &c. P. 452.
† P. 393.

whole world, for ever continue to be exactly on the existing lines—in other words, that India should continue to export the raw material to England and import the manufactured goods from England. If then we ask for Protection only to enable us to alter this state of things, which we say is the result of an accident, which the gifts of Nature to the two countries do *not* sanction, which prevents the world from producing as much in the long run as it would if the conditions were reversed—if we ask that, then whatever other criticism our demand may be open to, it certainly is not open to this which we are now discussing. Whatever the extreme advocates of Protectionism may be logically bound to accept as the result of their principles, the qualified protection for which alone I am now contending does not logically lead to what Professor Cairnes very justly calls the "intellectual and moral loss which would result from the withdrawal of the principal motive to the intercourse of mankind."*

Extreme cases, Sir Alexander Cockburn once said, are the tests of principles†. And I have, therefore, not been unwilling to consider even the extreme case to which Mr. Macdonell has pressed the principle of Protection. But now I will in my turn put a case—also admittedly a very

* Some Principles &c. P. 454. I may add, that I am quite prepared to accept the logical conclusion from this doctrine. If Bombay, for instance, has an established manufacture, which is better adapted to the circumstances of Poona, and which in a short time can be established in Poona by means of Protection, I would protect the Poona manufacture against Bombay.

† Compare Mill's Dissertations and Discussions IV. 124.

extreme one—to test the broad principle of Free Trade. Suppose a small country particularly adapted to the production of one article only, which happens for some time to be in very large demand, but does not itself satisfy any of the primary necessities of mankind. According to the broad principle of Free Trade, that country ought not to waste its labour and capital on any other article of production at all, but ought to be content to receive all it wants from other countries in exchange for the article in question. And yet it seems to me to be quite clear, that it would be extremely bad statesmanship, even if it were good Political Economy, to confine the production in such a case to that article. "The rhythmical tendency which is traceable in all departments of social life, which carries the devotees of fashion from one absurd extreme to the opposite one,"* might at any time stop the demand for the article; and what then would be the condition of our small country? I have already stated, that I put this as an extreme case, and yet we are not altogether free from a danger somewhat similar to that here indicated. During the discussion on the Import Duties on Cotton Goods, Messrs W. Nicol and Co. of this city, addressed a letter† to our local Chamber of Commerce, in which, after premising that it is of vital importance "that each and every outlet for our cotton should be kept open," they go on to say as follows:—"This is the more important at a time when the margin between

* H. Spencer's Essays on Education P. 148.

† See Report of the Bombay Chamber of Commerce 1873-4 P. 36.

American and Surat Cottons in the home markets has to be considered, for this margin appears likely to increase rather than diminish in proportion as the Southern States recover from the effects of the Civil War. *We know that Lancashire operatives have before this refused to work E. I. Cotton;*..... and it is always a subject of serious consideration with most English Mill owners as to what proportion of Surats their people will work up as compared with Americans. *This is gradually becoming the case, too, over the Continent.*" Considering, that our exports of raw cotton during the ten years from 1866 to 1875 average about £20,000,000, and form over a third in value of all the merchandise exported during the same period,* the danger indicated in this letter is not so very unlike the danger in our extreme case.

We now come to the last objection which has been urged against the Protectionist system, namely, that it involves the great evils of State interference with trade and industry. We are here brought face to face with a question which has been very powerfully debated only a short time ago, by some of the greatest intellects of this century—I mean the question—what are the legitimate functions of government? I conceive, however, that it is not by any means necessary for me on the present occasion to consider the merits of the whole controversy, to which the question has given rise, between Mr. Herbert Spencer on the one side, and Professors Huxley

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* The precise figures may be seen in the recently received Statistical Abstract concerning India No. X. P. 49.

and Cairnes on the other.* For I think, that even accepting Mr. Herbert Spencer's view, which carries the limitation of governmental functions to the furthest point, the Protectionist case, as we have stated it, may be sustained. In considering Mr. Spencer's view on this subject, it is particularly necessary to take it in connection with his general philosophy. And one of the pervading principles of that philosophy in its sociological aspect, is that there is a relation always subsisting between a society and its institutions, which harmonizes them, so to say, and which makes the useful institutions of one society not necessarily useful in another. As Professor Cairnes observes, agreeing in this respect with Mr. Spencer: "Further it may be conceded that the qualities of mind which characterize the individuals composing a savage horde or a nomad tribe, must render it impossible that the horde or the tribe should, in its corporate capacity, exhibit the traits characteristic of a civilized nation; just as it would be equally impossible that people who are still in the state of civilization, presented, let us say, by the inhabitants of British India, should by any amount of legislative or political manipulation, be made to yield the social and political results yielded by the more advanced nations of Western Europe."†

* See Spencer's Essays (2nd series) P. 143; Fortnightly Review November 1871, and Huxley's Critiques and Addresses, P. 8 *et seq*; see also Preface P. VI *et seq*; Fortnightly Review December 1871 and Spencer's Essays (3rd series) P. 127 *et seq*; Study of Sociology, *passim*; and Fortnightly Review, January and February 1873; and Spencer's Social Statics Part III.

† Fortnightly Review. February 1875 P. 263.

Or to put it in the words employed by Mr. Spencer himself, in that "vigorous piece of argumentative writing"* which constitutes his most recent statement of the view held by him. "It is only when a considerable advance has been made in that metamorphosis which develops the industrial structures at the expense of the predatory structures, and which brings along with it a substantially independent co-ordinating agency for the industrial structures—it is only then that the efficiency of these spontaneous co-operations for all purposes of internal social life, becomes greater than the efficiency of the central governing agency"† It seems, therefore, to be plain, that upon Mr. Spencer's principles, even if we leave the criticisms of Professor Huxley and Professor Cairnes out of consideration, the broad doctrine negativing all Government interference in trade &c. cannot be maintained in its application to this country. Upon the general question, I may also add, that in the very elaborate comparisons between governmental action and individual action which we find in sundry passages of Mr. Spencer's writings, he does not appear to have attached due weight to the circumstance which is thus referred to by Professor Huxley with his usual felicity. "The state," says he,‡ "lives in a glass house; we see what it tries to do, and all its failures, partial or total, are made the most of. But private

* Huxley's Critiques &c Preface P. VI.

† Fortnightly Review December 1871. P. 617. Spencer's Essays III. 157-8.

‡ Critiques and Addresses P. 9. Fortnightly Review, November 1871 P. 529.

enterprize is sheltered under good opaque bricks and mortar. The public rarely knows what it tries to do, and only hears of failures when they are gross and patent to all the world."

But further. It seems to me to be pretty obvious from the whole history of our country for the last few years, that if Mr. Spencer's doctrine, in all its breadth were to be applied—or rather misapplied—to this country, we should not only fail to have the results of which Mr. Spencer speaks; we should not only fail to do the things done by Government better than Government does them; we should go without the things altogether. After pointing out that in England, all the knowledge from that possessed by the poor to that of those "who carry on the business of the country as ministers and legislators," has been "derived from extra-governmental agencies, egoistic or altruistic;" Mr. Spencer proceeds to say: "Yet now, strangely enough, the cultured intelligence of the country has taken to spurning its parents; and that to which it owes both its existence and the consciousness of its own value is pooh-poohed as though it had done, and could do, nothing of importance."* Well, need it be said, that this is altogether inapplicable to the circumstances of this country? Need we say, that the history of India during the past few years shows a state of things exactly the reverse of this? Our canals, and our railways; our model farms, and experiments for improving cotton seeds; our Contagious Diseases Act, our Vacci-

* Fortnightly Review December 1871. P. 651. Spencers' Essays, III 463-4.

nation Act, and our Cotton Frauds Act; our Post Office and our regulations for buggy fares; our Archæological surveys, and our Universities, and Colleges, and Schools in all their various grades; all show the workings of Governmental agency, not only not mischievous, in the majority of cases, but even positively beneficent. Where should we have been, if thrown upon the resources of those "spontaneously developed agencies," whose praises Mr. Spencer is never tired of singing? Those praises are doubtless fully merited; but only when understood with the necessary limitations as regards the conditions of the social environment—limitations, which, as already pointed out, Mr. Spencer himself will probably not repudiate. In the report of the proceedings of the second International Congress of Orientalists, of which a copy is now lying before me, I find Professor Eggeling reported to have spoken as follows: "By appointing General Cunningham and Mr. Burgess archæological surveyors, the Government of India had rendered a very great service to archæological students." And in the discussion which followed on Professor Eggeling's paper, Mr. L. Bowring, Dr. Caldwell, Mr. Burgess, and even Sir Walter Elliot—the individual of all others who has done most to help archæological students—all expressed their opinion as to "the utter insufficiency of individual action"* with regard to the preservation and collection of old inscriptions. Similar instances could be easily multiplied, if it were necessary—

* P. 38. (Trübner 1876).

which, I apprehend, it is not—to labour the point any further. It seems to me, upon the whole, that Mr. Spencer's doctrine is not applicable in the circumstances of our country; and having regard to the considerations already suggested, I would add, that Mr. Spencer himself would probably agree in this view.*

But apart from the objection based upon Mr. Spencer's doctrine of specialized administration, there are other considerations urged against Government interference with trade which now require to be discussed. The general question of the limits of the province of Government has, as is well known, been handled with his usual fulness by Mr. Mill in his Political Economy. And to me, I own, some of the fundamental propositions laid down by him appear to support the view which I have ventured to adopt rather than the reverse. At the very outset, for instance, Mill says, that the question of the true sphere of Government agency "does not admit of any universal solution;"† and further on, he qualifies the general proposition, that "the great majority of things are worse done by the intervention of Government, than the individual most interested in the matter would do them," by the significant addition—"in all the more advanced communities."‡ Now this is the main point in our contention. We say that the example of England is not conclusive in India—that the policy of

* The subject has been again discussed in the Westminster Review for April 1877.

† Political Economy. (Popular Edition) P. 568 a

‡ Ibid P. 571 b

Laissez faire may prove to be as mischievous here as it has proved fruitful of good in England. The question must be answered with reference to the facts of our social, political, and economical condition. How again does Mr. Mill treat the question of Government interference in education?* In principle, his arguments in favour of it appear to me to cover the case before us. I do not wish to go through all those arguments. Assuming that the existence of manufactures in a country is desirable—a point to which we shall presently address ourselves—the case of education and of Protection for manufactures would seem to stand on much the same footing. And we may say, adapting Mr. Mill's language, that "when unless introduced by Government help, manufactures would not be introduced at all, such help has the opposite tendency to that which in so many other cases makes it objectionable; it is help towards doing without help."† Look again at the principle on which the State protects those of immature judgment. A nation may be of immature judgment, just the same as an individual.‡ And

* Ibid P. 570 *et seq*; and compare Dissertations and Discussions IV. 12-13.

† Political Economy P. 576 b.. It is unnecessary to give detailed references. I will now content myself with referring generally to Book V. Chapter XI.

‡ In the article to which reference has been already made, I find corroboration for this view, in the following words of the Westminster Reviewer, who appears to be an adherent of Mr. H. Spencer's doctrine. "There is", he says, "an early stage of existence in which nations like infants or children cannot be set free from authority; they cannot judge wisely enough or act with sufficient self-control to avoid fatal or irretrievable mistakes." Westminster Review for April 1877. P. 325.

with an entirely different civilization from our own such as we now stand face to face with; with entirely different modes of work; with the need for kinds of knowledge rarely, if ever, cultivated amongst us; our nation is, to all intents and purposes, of immature judgment in the matters we are considering. Without State protection, without State guidance and aid, we should know but little of the resources of our country; knowing those resources we should have no knowledge of the modes of developing them; or having a knowledge both of the resources and of their modes of development, we should still be at a loss for the means of developing them, without Government encouragement. Once again, Mr. Mill's observations on the "hours of factory labour," and still more, his remarks on Mr. Wakefield's system of colonization, rest on principles which, I venture to think, are not without application in the question before us. And, therefore, considering all these matters, we are safe in concluding, that on the general principles on which State interference is justifiable, there is nothing to object to in the State encouraging the rise of manufactures in this country.

But before leaving this topic, it is desirable to consider an objection urged by Mr. Rogers to the intervention of Government in such a case. "Who," he asks, "shall decide whether a particular industry should be developed in a country by protective regulations? Who shall determine the period at which the protection shall cease? Is it not manifest that the selection of favoured industries (of course I

except those which may be conceived as absolutely necessary to the well-being of the country) and the prolongation of the term of protection will be matter of perpetual intrigue ..... ?"* I am quite free to admit that there is much force in these questions, considered in the abstract. But they are pointless, I submit, when viewed in the light of our present condition. Where a Government is asked to interfere, and does at times interfere, between debtor and creditor, where it decides what sort of education shall be given to its subjects; where it determines what roads shall be made, and what lines of railway laid down; where, I say, Government does all these and a legion of other things, surely it may also determine what industry shall be protected, and how long the Protection shall last. "Government managment," says Mill, "is proverbially jobbing."† And I am not prepared to say that our Indian Government is more immaculate in this respect than the ordinary run of Governments. But there need not necessarily be more scope for jobbing in this affair of Protection to manufactures than in the thousand and one other matters with which Government deals. And as in these latter, the possibility of jobs is not held to be an effective argument against Government interference, no more, by parity of reason, should it be such an argument in the case we are considering.

* Political Economy P. 233. I own that the parenthetical clause appears to me a rather dangerous one to Mr. Rogers's argument. For, whose "conception" of the "absolute necessity" is to prevail? That of the governing powers, I take it; and then you have full scope for "intrigue."

† Political Economy P. 580 a

The position, therefore, which we have already taken up is not rendered less tenable by the apparently formidable attack of Mr. Rogers upon it.

We have now finished the first and most important section of the present discussion. It appears to me, that the facts and arguments to which attention has been drawn already, are amply sufficient to justify the proposition, that in a country circumstanced as ours is, Protection is not the mischievous agency which it may be in other countries; that where there is reason to believe, that an industry is naturally not unadapted to the circumstances of a country, but fails to flourish there in consequence of accidents the effect of which a Protectionist policy may remove, there a Protectionist policy may not only be harmless, but in the long run positively beneficial. In his Budget Speech in 1864, Mr. Gladstone said: "Well, according to the old proverb, "give a dog a bad name, and hang him," it is, I confess, somewhat satisfactory to find that, at this time of day, we have nothing to do but to attach to any doctrine the name of protection, in order to demonstrate to any reasonable man that we have fastened upon it the worst and most conclusive condemnatory charge to which any plan can possibly be open; so much so indeed, that no man will have the courage to defend a legislative proposal under such a stigma."* I need not say that I cannot share in Mr. Gladstone's satisfaction at this state of things. And I trust, that the observations already made have shown,

* See Gladstone's Financial Statements P. 501.

that if I have had the "courage" to defend a "proposal under such a stigma," such "courage" is not altogether synonymous with rashness. Mr. Gladstone may be, and—if I may say so without presumption—I think, is right, if his observation is confined to England. But in applying it to this country, we must recollect what another great authority of our own day has said on this subject. "I venture," Professor T. E. Cliffe Leslie has said,* "to maintain, to the contrary, that Political Economy is not a body of natural laws in the true sense, or of universal and immutable truths, but an assemblage of speculations and doctrines which are the result of a particular history, coloured even by the history and character of its chief writers; that, so far from being of no country, and unchangeable from age to age, it has varied much in different ages and countries and even with different expositors in the same age and country." If then even the theoretical doctrines of Political Economy are not necessarily true of all countries alike, *á fortiori*, would the practical precepts based upon those doctrines be inapplicable to all countries alike. This truth which, I may add, has also been recognised by Mill,† appears to me to have been ignored and kept out of sight in the controversy regarding Protectionism in India. It has been said, for instance, and said by very high authorities, that the British Parliament

* Fortnightly Review November 1870 P. 549.

† Dissertations and Discussions IV. 88. I find that Mr. Mill had in Parliament also given a similar answer to Mr. Lowe to that which Professor Leslie has given in the Fortnightly Review. See the Indian Economist for October 1871 P. 57, where the answer is extracted.

which has signed the death-warrant of Protection in England could not permit it to exist in its great Dependency. It is obvious, that there is an assumption underlying this argument, which is quite inconsistent with the opinions of Mill and Leslie stated above. That the British Parliament will probably *consider* the argument conclusive, may, I think, be admitted, having regard to the signs of the times, and to the fact that such a statesman as Mr. Robert Lowe holds a notion about Political Economy the reverse of that of Mill and Professor Leslie. But it does not follow, that the British Parliament is *logically* bound to accept the argument. There is nothing illogical in its holding Free Trade to be good for England, and not yet good for India. It is a principle of the British Constitution that the people shall not be taxed except by the vote of their representatives in the House of Commons. Of that fundamental principle, we are not allowed the benefit, although we have frequently asked for it, and although the benefit is indisputable. Why should we have another principle of the British Constitution—certainly not so fundamental as this—extended to us, when we ask that it should *not* be extended to us, and when the benefits to be derived therefrom are, to say the least of it, problematical? The logical inconsistency does not seem to me to be greater in the one case than in the other; and for this very good reason—in neither case is there a logical inconsistency at all.

And now let us turn to the other branch of our subject. Having, as I trust, shown that none of the stock objections

to Protectionism are of any force in the circumstances of our country, I shall proceed to set down some of the positive arguments, which, I think, may be urged in favour of a system of Protectionism in India. Now everybody who has paid any attention to this subject is aware of the one universal wail for departed industries which may be heard in various parts of this country.* It is well known, that several articles, which in days gone by were exported from India for the use of the rest of the world, are not now produced in India at all, having been supplanted by the products of machinery turned out in Europe and elsewhere. We have, therefore, the melancholy spectacle of old manufacturing industries either dying out or already dead, and no new ones taking their place. Now this being so, the experience of the past few years has, I think, shown, that no advantage in the way of the opening of new industries can be gained, unless some guidance and aid are forthcoming for the instruction and support of our capitalists. If then we are to follow what may be called the *Laissez faire* policy in this matter; if we are to act on the theory that trade and industry must be left alone to work out their own progress and evolution; if we are to hold all Government help towards such progress to be unjustifiable in principle, and mischievous in practice; then reasoning from our experience of the past, the conclusion as regards our future prospects seems to me to be obvious. Our general want of enterprise,

* Compare the various articles on that subject in Mookerjee's Magazine.

our ignorance of the resources of our own country, our ignorance of the modes by which those resources are to be developed—all these will reduce us to the condition of a nation of pure agriculturists, with no manufactures worth the name to afford "scope," as Professor Cairnes has it, "for wider and more diversified cultivation, such as is furnished by an industry branching in numerous directions and offering to enterprise a varied field."* Is this a desirable state of things? Is it a state of things which we can contemplate calmly and without alarm? Surely, in the presence of the dreadful Famine now striding the narrow world of our Presidency, there cannot be two answers to these questions. Surely, when we see how the scantiness of rain in but one season has resulted in the distress of thousands, nay—in spite of official denials, I will add, for I have the most trustworthy private information on the point—has already resulted in several deaths;† surely, when we see this, we cannot stand stoically serene before a theory, which will turn us over, bound hand and foot, so to say, to the tender mercies of the seasons. And since we have considered the objection to Protectionism based on the ground that it demoralizes industry, let me ask, is there no source of demoralization in the state of things we are now witnessing? Is there nothing demoralizing in

* Some Principles &c. P. 475 *et seq.*

† I wish to guard here against a possible misunderstanding. I think that, *upon the whole*, our Government did bravely and well in the matter of the famine. At the same time I also believe that it fell into some very grave mistakes as regards the supposed conspiracies of workmen, the "one-pound ration," and so forth.

cultural—cannot attain a high state of civilization and culture. And for this there is a great foundation of reason."* Professor Cairnes,† too, in the sequel of the passage which I have quoted in the last paragraph, about offering a varied field to enterprise, observes: "I cannot deny that there is a certain basis of truth in the considerations just stated; and that circumstances may even be imagined in which they would possess real cogency." The same testimony can be obtained from the mouths of practical men, and it is particularly valuable, being given with special reference to this country. In the course of the discussion at our Chamber of Commerce on the Import Duties on Cotton Goods, Mr. Kittredge said: "Agricultural countries are proverbially poor countries, and India is no exception to the rule. While she has to depend, as has been the case until very lately, wholly upon agriculture, she will remain poor."‡ And to the same effect are the opinions of Mr. R. H. Elliott and Lieutenant Colonel Tyrrell.§ We shall presently see some of the economical grounds on which these opinions rest. But in passing I wish to draw attention here to the higher ground to which both Mill and Cairnes allude—namely, that a purely agricultural people cannot be a highly civilized people. It was with reference to this ground mainly, that at the

* Political Economy. P. 558 a.

† P. 476. See also Syme's Industrial Science P. 135. and the memorial of the Bombay Chamber of Commerce quoted by Mr. Syme in that book at P. 77.

‡ Report of the Chamber of Commerce 1874-5. P. 98.

§ See East India Association Journal Vol VIII P. 126. Vol IX. 49-50. See also Fortnightly Review April 1873. P. 462.

thousands of people living on the charity either of private individuals or of the State? Is there no danger here of charitable support "begetting the need for support"? On the other hand, should any heartless theorist succeed in convincing people of this demoralizing tendency of charity, and thus dry up that refreshing fountain, will there be nothing demoralizing in that condition of things, where man sees his brother man in distress, nay on the brink of eternity—but enslaved by a theory, will not, though he can, hold out a helping hand? See then the position in which we stand. Abandoning Protectionism, because it is demoralizing, and falling back, then, as in our circumstances we must, on agriculture, we get periodical famines. Then if we let the stream of charity flow, it is demoralizing. If we do not let it flow, it is demoralizing all the same.

"What boots it at one gate to make defence,
And at another to let in the foe?"

But legitimate as, in my opinion, this argument is, we are not left to rely upon it alone. Even if we had not, as most unfortunately we have, to count on the periodical recurrence of famines,* it would still be true, that for our nation to be purely agricultural is not a desirable state of things. Among writers who have discussed the theory of this subject, Mr. Mill, in a wellknown passage of his work on Political Economy, has said: "They"—meaning the American Protectionists—"believe that a nation all engaged in the same or nearly the same pursuit—a nation all agri-

* Compare Journal Royal Asiatic Society XVIII P. 422.

beginning of this essay, I thought it desirable to point out the necessary limitations with which economical generalizations must be received, when they come to be applied to practice. That ground will be admitted to be a very strong one—yet Political Economy proper, I apprehend, does not take it into calculation. But further. It is now a very well-recognised truth, that to raise produce by agriculture in any country is to take so much out of its soil, and that unless something is given back to the land in return for what is thus abstracted from it, the process of agriculture cannot be everlastingly fruitful. Some of you will probably recollect the comparison made by Professor Huxley* between what he calls the "matter of life" and the "magical wild ass' skin" of one of Balzac's stories. Well, land may be compared to this "matter of life," in as much as every use made of both implies "expenditure which cannot go on for ever," though both have the "capacity of being repaired." Now it is pretty well known, that in our country, this "capacity of being repaired" is not much exercised. That is not merely the result of my own inquiries, but in the general Administration Report for 1874-75, the Government of Bombay have thus acknowledged the fact :† "Land is overcropped, and too little nourishment returned to the soil; and though this deteriorating influence has been in operation for centuries, yet high prices through a series of years have stimulated the desire to secure large crops with-

* Lay Sermons &c P. 175.
† P. 115.

out sufficiently altering the custom in respect to the preparation of manure." Now, it is obvious, that the mischief resulting from this exhaustion of soils is greater where the produce of agriculture is, to a great extent, exported, and only a comparatively small quantity used in the country itself.* And according even to Mr. J. E. T. Rogers, "a Government may with propriety check the too rapid exhaustion of a limited quantity of any commodity, when that commodity is not only valuable, but is a condition to the economical prosperity of a country."† The conclusion from these premises need not be stated.

Again, it is not an unfamiliar fact, that for at least three months of the year, the agricultural population of the Mofussil of this Presidency is to a great extent unemployed. Such of the people as can do so, endeavour to engage in some other work, either, as I am told, doing business as drivers of hack bullock carts or in some other way in the districts, or, as pointed out by Dr. Hewlett in his Census Report, coming down to Bombay for such employment as they can get. Dr. Hewlett‡ says, that there is a large influx of such men into Bombay from the villages in the Deccan, from Kutch, Kathiawar, Colaba, Ratnagiri,

* Compare on this point, Mill's Political Economy pp. 557 *et seq.*

† Political Economy. P. 223. This admission by the way, affords a loophole for the entrance of much of that intrigue and of those means for demoralizing Governments against which Mr. Rogers strongly protests. See too P. 45 *supra*.

‡ See Dr. Hewlett's Census Report for 1872 P. 10. And compare Poona Sârvajanik Sabhâ's Report for E. I.F. Committee P. 27.

Malvan, Goa, and down the coast—which is a pretty large area. It is easy, therefore, to see, that remaining a merely agricultural people, we should be economically not so well-off as our capacities would fairly entitle one to expect. A not inconsiderable portion of the time of the ryot population will be spent in doing no work—or to use the language of Political Economy, a large number of the ryots will, for at least two or three months of the year, be altogether unproductive labourers. Besides, as pointed out by Mr. Syme in the article which we have already frequently referred to, "the whole population of a country can never be fully employed, unless there be a diversity of occupations suitable to the young, the old, the weak and infirm of both sexes."* And even in our present condition, with so few manufactures worth the name, a portion of the rural population, as stated in the Report of the Deccan Riots Commissioners, is also employed in trades and occupations other than agriculture.† It is, therefore, quite plain, that even from the purely economical point of view, even confining our attention to the means of increasing the aggregate production of the country, it is not desirable to permit our industry to be confined to agriculture.

There is another point not unworthy of note. So long as our system of Land Revenue Settlement continues to be what it is; so long as there exists a danger of a share of the profits

* Fortnightly Review. April 1870. P. 461. And compare also Carey's Social Science Vol III. P. 28.

† See P. 14 of the Report.

derived from improvements on the soil being pounced upon on behalf of the State;* there is not, I think, much chance of large capitals being employed in agricultural improvements. I do not wish now to enter into any controversy regarding the policy of a Permanent Settlement of the Land Revenue, either on the model of the Bengal Settlement or any other.† But this I will say, that while we hear of the vagaries of the Survey and Settlement Department with such frequency as we do, it is impossible to fold our hands in content, and rest under the self-complacent belief that we are living under the best Land Revenue System that can be adopted. If this is so, it seems to me quite impossible to contend, that it will be an economical benefit to the country to devote its labour to the extension and improvement of agriculture alone. Labour will not be so devoted; and much capital will remain absolutely without employment.

Once again. Let us look at the matter from another point of view. Mr. Wakefield's theory of colonization, which, according to Mill, "has excited much attention and is destined to excite much more,"‡ is based upon the truth that "a

*It is true that this is expressly prohibited by an Act of the Legislature. But we know how a coach and six may be driven through such Acts in administering them. And I am assured by one who has very carefully and exhaustively investigated this subject, that in practice the Act is so far almost a dead letter. Even a supposed danger of this, however, is enough for our argument.

†The authorities against the Bengal settlement are collected in a note in the extremely elaborate judgment of the Chief Justice of Bombay and Mr. Justice West in the famous Kanara Land Case P. 26.

‡ Political Economy, P. 75 s.

country will seldom have a productive agriculture, unless it has a large town population, or the only available substitute, a large export trade in agricultural produce to supply a population elsewhere."* Now considering that our Railway system may be said to be almost in its infancy; considering that the conveyance charges are still rather high; and that raw produce, as a rule, can ill bear these additional charges; the "substitute," which Mr. Mill speaks of in the passage now quoted, must be regarded as particularly inadequate in this country. And it is quite clear, that if we could secure in India "a larger manufacturing population"—a contingency which Mr. Mill himself hints at†—the results would be vastly more beneficial to the country. It is unnecessary to specify the modes of working of Mr. Wakefield's plan of colonization. Its merits are pretty well understood. But the application of the truth underlying that plan to the circumstances of our country shows the desirability, even from an economical point of view, of introducing manufactures into it. In the sequel of the passage from which we have already quoted, Mr. Mill himself points out some of the conclusions to which the application of that principle leads. The passage is one, which has not attracted any attention in connexion with the present controversy—at any rate, I do not recollect any reference having been made to it. I shall, therefore, make no apology for excerpting rather liberally from it. Mr. Mill opens with the observation, that

* Ibid P. 74 b. † Ibid P. 75 b.

"it is, above all, the deficiency of town population which limits the productiveness of the industry of a country like India." And after pointing out that the agriculture is "conducted entirely on the system of small holdings," but that nevertheless there is a "considerable amount of combination of labour," and at times Government help also, he goes on to say: "The implements and processes of agriculture are however so wretched, that the produce of the soil, in spite of great natural fertility and a climate highly favourable to vegetation, is miserably small, and the land might be made to yield food in abundance for many more than the present number of inhabitants, without departing from the system of small holdings. But to this the stimulus is wanting which a large town population *connected with the rural districts by easy and unexpensive means of communication*, would afford." So far, it appears to me, that the argument points to the establishment of various manufacturing centres, so to say, in our rural districts. But Mr. Mill proceeds to say, that "the town population does not grow, because the few wants and unaspiring spirit of the cultivators prevent them from attempting to become consumers of town produce." And he, therefore looks to the extension of our exports of agricultural produce for the development of our resources. This is, no doubt, in some measure, correct. But on the other hand, there is now *some* demand for town produce even in the rural districts. The establishment of manufactures to supply the wants at present satisfied by the imports from Europe and elsewhere

will afford the stimulus which Mr. Mill speaks of, more effectively and more extensively, than the mere extension of our export trade.* And the "more extended wants and desires" which will result from this, will lead to a demand for other commodities for which again other factories may be established. And so the various actions and reactions in the industrial organism may lead to experiments guided by correct information, till we shall have seen for what particular manufactures our country has special capacities. Such manufactures as may be found, by experiments or by anticipation from known facts, to be not adapted to the circumstances of the country may with advantage be abandoned. Such as may appear to be suitable, ought to be fostered by temporary Protection, sacrificing a little present good for greater good in the future. And then, but not till then, will our industrial organization assume its normal state—assume that state for which, if I may say so, Nature has designed it.

In such a case as ours, Protectionism falls within the principle of the one exception recognised by Adam Smith to the general doctrine of Freedom of Trade. That exception occurs, it is well known, when, as Adam Smith himself expresses it, "some particular sort of industry is necessary for the defence of the country."† True it is, that the particular case, which Dr. Smith had in his mind in stating this exception, was the case of the military defence of a

* Compare also on this point the remarks of Mill, Political Economy P. 74 b.

† Wealth of Nations Book IV. Chapter II. Dugald Stewart in his criticism on this seems not to question the theoretical correctness of the exception but its practical efficacy.

country; and he applied the exception in favour of the English Navigation Laws. But the military defence of a country is not an end in and for itself—it is valuable only as a means to the end, which is the safety and progress and civilization of the country. And therefore, if upon consideration we should find anything to be necessary for the true progress and improvement of a country, that ought as much to come under Adam Smith's exception as the maintenance of a powerful and extensive fleet. In strict logic, there appears to me to be but little difference between the two cases. Now we have shown, that manufactures are necessary to enable us to make any great progress in the arts of modern civilization. We have shown that without manufactures our industrial condition must be regarded as abnormal. We have shown that, with agriculture alone, even our economical condition must needs be less prosperous and satisfactory than it is in our power to make it. It, therefore, follows, that Protection to manufactures in India stands on at least as sound a footing in theory as the Navigation Laws did in England.

But then, says Mr. Macdonell in his Survey of Political Economy, "every country possesses a natural protection for its manufactures in the cost of freight, and the natural preference of countrymen, it may be friends, to foreigners; home industries have patents, so to speak; and if this natural protection does not suffice to create manufactures, it may be assumed that they are not wanted."* I

* P. 691; see also Rogers Political Economy P. 252.

venture to think that this is not by any means a satisfactory argument. This "natural protection," this "patent," is undoubtedly a real force; but it is not the only force to be estimated. You have to take into account, *per contra*, all the circumstances noted before—want of enterprise, ignorance, and to borrow the words of Mill, "the present superiority" of the rival "in acquired skill and experience" due to his "having begun sooner."* These are not trifles, even taken singly; taken all together, they constitute a very heavy dead-weight indeed. But further, the argument that since the "natural protection" does not create the manufacture, *ergo* such manufacture is not wanted, appears to me a *non sequitur*. It is difficult to see how the conclusion follows from the premises. A far truer view of the matter, as it appears to me, is contained in the closing sentences of the Chapter from which I have quoted. Speaking of the English Economists, Mr. Macdonell there says: "They simply tell us that Protectionism is expensive to a nation. That is but part of the question. It still remains to be determined whether Protectionism may not occasionally be of service in apprenticing a nation, so to speak, to some industry, at first uncongenial, but subsequently proving suitable to it; whether it is always safe to trust to foreigners for a supply of commodities that may be of vital consequence in war; whether a mixture of city life the concomitant of manufactures may not be so precious as to counterbalance some present loss; whether the collapse of a

* Political Economy P. 556.

large class or interest living by a precarious home industry is always outweighed by cheapness, sometimes distributed in imperceptible portions to consumers; and lastly whether the decline in production, due to an adoption of protection, may not sometimes be followed by a better system of distribution? If I may be permitted to give an opinion on these questions, I should say that all European countries, and the United States, have outgrown the necessities of Protectionism."* This passage, as I have said, appears to me to be far more correct in principle than the previous one. And the last sentence especially bears out the proposition, which I have already contended for with the help of Mr. Mill and Professor Cliffe Leslie, that a good, economical rule in one country is not necessarily a good rule all the world over.

It thus appears, that the consequences of India entirely ceasing to have any manufactures worth the name, are not particularly pleasant to contemplate. It follows, therefore, that an attempt should be made to introduce some manufacturing industries into the country; and if they cannot be secured, as they have not been hitherto secured, without Protectionism, to Protectionism we must resort. There is, however, another argument of some value bearing upon this part of the subject. It was pointed out by Mr. Dickinson, in the course of the discussion on Mr. Elliott's paper on "Our Indian Difficulties," read before the East India Association, that "such things as Madras sheetings and Dacca Muslins were wellknown articles of commerce, and the way in which

* P. 397-8.

those industries were destroyed was by a most cruel system of protective duties in the English manufacturer's interest. By means of duties at the ports, and duties in transit, the native manufactures were utterly crushed out."* And Mr. Montgomery Martin has written more specifically upon this topic to the same effect† "For many years," he says, "great commercial injustice was done by England to British India. High, indeed prohibitory, duties were laid on its sugar, rum, coffee &c. to favour similar products grown in the West Indies; still worse, we compelled the Hindus to receive cotton and other manufactures from England at nearly nominal duties (two and a half per cent), while, at the very same time, fifty percent were demanded here on any attempt to introduce the cotton goods of India. The same principle was adopted in silk and other articles; the result was the destruction of the finer class of cotton, silk, and other manufactures, without adopting the plan of Strafford in Ireland during the reign of Charles I—namely, the founding of the linen trade as a substitute for that of woollen, which was extinguished in order to appease the English handloom weavers." Mr. Martin then sets out the Resolutions which he succeeded in getting the Court of Proprietors of the East India Company to adopt, and says finally that "the late Sir R. Peel admitted the injustice, and adopted measures for its redress." We see, therefore, that the agency employed to destroy our indigenous manufac-

* East India Association Journal VIII. 138.

† The History of British India. P. 543 n. Compare also what Mr. R. Knight says at. Journal. E. I. Association II P. 255.

tures was this very Protectionism. And when we ask that the same instrument which was used as a sword against us should now be used as a shield for us, we are met with the reply—Oh, it belongs to an antiquated arsenal, the English Government has long thrown it aside, and it cannot be used now. I deny, that in extending Protection to any native manufactures, the British Government would be doing any injustice to the manufactures of England. But even if, Mr. Raynsford Jackson were right in contending, as he seems to do, that it would be an injustice,* I venture to submit, that the injustice would only operate by way of compensation, as it were, to those to whom injustice had been done before in the interests of the very persons who are now complaining. But further, not only have Indian manufactures been crushed out by Protectionism being worked against them, but English manufactures have been in their infancy fostered by Protection being employed in their favour. We shall state the facts in the words used by Mr. Gladstone in his Financial Statement of 1864. He said: "But what is really the case of the papermakers? Is not their trial the same, to which, one after another, almost every branch of British industry has been subjected? They grew up under the influence of protection. Protection, in a greater or less degree, unnerved their energies. They adopted, and were content to depend upon, imperfect and wasteful methods of manufacture, and when the legal protection, which had thus beguiled them

* Fortnightly Review. June 1876 P. 826.

into security, was by Act of Parliament withdrawn, considerable suffering ensued. That suffering gradually threw them back upon the exercise of their own invention and skill. The restorative process next commenced; and after a short interval, every one of those branches of industry, I believe with scarcely more than a single exception, has become more healthy, more vigorous, and more profitable than before."* We thus find, that "almost every branch of British industry" actually grew up under the influence of Protection. And under these circumstances, it seems to me to be pretty obvious, that the demand for a free fight and no favour, which Mr. Raynsford Jackson makes on behalf of Lancashire, is not in reality so reasonable as it seems. On the terms which Mr. Jackson proposes, the combatants must be very unequally matched.

There is one other point on this branch of the subject, which I shall dwell upon—but only briefly, as it relates at present only to the cotton manufacture. It has been a subject of frequent remark, that adulteration of cotton goods is extensively carried on in England. Messrs. W. Nicol and Co., in their letter to our Chamber of Commerce already referred to, state that "adulteration of cloth has become a science now-a-days in England;" and their statement is amply corroborated.† What now is the mode in

* Gladstone's Financial Statements P. 482. It will be observed, that the "suffering" of which Mr. Gladstone speaks need not be undergone at all, if the Protection is avowedly given, in accordance with the limitation laid down by Mill, for a short period only, so as merely to give the industry an opportunity of taking root.

† Report of the Chamber of Commerce 1873-74 P. 37 *et seq.* and Syme's Industrial Science P. 80 *et seq.*

which this so-called Free Trade policy will work? The duties being repealed, the local mill-owners lose so much out of their profits. The result will probably be, that some at least of the capital engaged in the local industry will be withdrawn from it. The Manchester manufacturer then has nearly the whole field to himself. The adulteration may increase; and yet the poor consumer, in whose interests, forsooth, the duties were repealed, must buy these adulterated goods. Any attempt to set up a rival can, of course, be easily put down by those already engaged in the trade.* See, then, the result. The local consumer is entirely at the mercy of the foreign producer. Either he must go without cloth—an alternative which need not be considered—or he must take adulterated cloth. In such a case, it is evident, Free Trade becomes synonymous with restriction in favour of Manchester. Competition means the monopoly of the parties in possession.†

The net result of all our investigation appears to me to be this. The objections ordinarily urged against a system of Protection to native industry, whatever their applicability in countries more advanced in modern civilization, are void of force in the circumstances of this country. Looking only at the economic aspects of the question, it appears, that not merely is Protection to native manufactures

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* Fortnightly Review, April 1873, P. 453 *et seq.*

† This is exactly paralleled by what Mill says about children "Freedom of contract, in the case of children, is but another word for freedom of coercion." (P. 577 Political Economy.) Compare also Syme's Industrial Science pp. 51, 69.

unobjectionable, it is even desirable, in the circumstances of our country. And this position is further strengthened by the conclusions to be derived from a study of the question from a higher point of view, so as to comprehend considerations about the general progress of the country. The arguments by which this position has been here supported, also indicate the limits within which that position is tenable. For they show, that if there are some manufactures to which the country is adapted by reason of its natural possessions and capacities, such manufactures only (saving very exceptional cases) should be protected and helped to come into existence. And they show also, that the Protection should be continued only for such a reasonable period as to afford what may, in the case of each individual industry, be a fair and sufficient period of trial. Within the limits and under the conditions thus specified, the theory of Protectionism, I venture to think, is not wrong, is not inconsistent with the true principles of Political Economy when correctly interpreted and properly applied. "The system of Protection," Professor Cairnes has said, "naturally grew out of the system of the Balance of Trade. They were not indeed so much distinct systems as different aspects of the same system."* This would be an incorrect observation as applied to the doctrine of Protection here advocated. That doctrine is not based at one single point on the theory, that the precious metals are the only wealth, and that the *ultima*

* Some Principles &c. P. 451.

thule of all policy is the acquisition of those metals. It rests on other data and on different reasonings.

"The aggregate wealth of a country," Professor Cliffe Leslie observes, "depends, of course, on the degree of development of all its resources; the development of all the capacities for production and commerce of all its localities and all its inhabitants. But to secure the development of all these resources or natural forces, one indispensable condition is perfect liberty in every locality, for every trade, every company, every individual, and every enterprise; to allow every effort, individual or co-operative, to be made, every experiment tried, every improvement attempted. ..... The wealth of countries is in proportion, not to their natural resources, but to the liberty for their use."* Now I do not know, whether the application which I am going to give to this truth is one of which Professor Leslie himself would approve; but it certainly does seem to me, that in cases like ours, the liberty, on which Professor Leslie lays such stress, is not to be attained under the dominion of free and open competition. It is a mockery and a delusion to speak of liberty, when the native endeavouring to develop the resources of his country, can be undersold and commercially ruined by the unlimited competition of the foreigner. You may just as well speak of the prisoner, surrounded by a deep and wide moat which he cannot cross over, as enjoying liberty, because, forsooth, he has no fetters on his person. We must have a more real liberty than unlimit-

* Cobden Club essays (2nd Series) P. 196.

ed competition can give us. And we must also be artificially nourished and protected, till we are able to stand with our own strength; and then throw the doors open for the bracing air of Free Trade.

"We boast our light," says Milton in his splendid Speech on the Liberty of Unlicensed Printing, "we boast our light; but if we look not wisely on the sun itself, it smites us into darkness.....The light which we have gained was given us, not to be ever staring on, but by it to discover onward things more remote from our knowledge." The light of Free Trade, I say similarly, which we have obtained, is not given us "to be ever staring on." We must "look wisely" on it. We must not treat it as showing *all* that is to be learnt regarding national progress. And we must also recollect that what is true of one country is not necessarily true of another country. Professor Leslie says: "The lesson which investigation of facts impresses more and more on one's mind is distrust of economic generalizations; still they are of incalculable utility if we are careful, both as far as possible, to cover under them only the proper particulars, and also to use them as guides to, instead of as concluding, inquiry."* In the spirit of this weighty observation, we have declined to treat the cry against Protection as altogether reasonable; we have declined to use it "as concluding inquiry." But using the principle underlying it as a "guide," we have endeavoured to show, that the actual facts and circumstances which meet us in

* Forthnightly Review, November 1872, P. 538.

this country are not "proper particulars" to be "covered under" that principle. We have shown, that in India, Protection will not lead to the evils which it has led to in other countries. We have shown, that here it will not foreclose—as it does elsewhere—any benefits likely to accrue to us but for its operation. Furthermore, we have shown reasons for holding that it will prove full of positive benefit to us. And therefore, upon the whole, we maintain, that both on the true principles of economic science, and on principles higher than any which economic science has to deal with, the system of Protectionism is one which ought to receive a fair trial in India.

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Note.—The figures at the foot of P. 21 I find to be incorrect. Unluckily I did not discover that they were so in time to rectify them or the remarks based on them on the following pages. The correct figures are given in the following Table prepared from the Statistical Abstract relating to India No. X. (P. 37 *et seq.*):—

	Bengal.	Madras.	Bombay.
Imports 1868-71.	21,821,424 £. 21,325,600 £. 19,496,082 £. 18,588,706 £.	3,688,248 £. 4,069,535 £. 4,046,505 £. 3,982,834 £.	20,153,317 £. 22,849,269 £. 21,814,164 £. 14,677,838 £.
Exports 1868-71	20,206,464 £. 21,266,324 £. 20,971,121 £. 23,240,609 £.	4,311,555 £. 6,114,041 £. 6,072,376 £. 5,150,726 £.	25,000,011 £. 23,123,611 £. 23,730,539 £. 25,102,584 £.

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A Lecture

ON

PERSONAL EXPERIENCES

OF

English Departmental Government,

BY

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Author of "Personal Recollections of George Croly, LL.D.," "Paper and Paper Making, Ancient and Modern," "The Practical Guide to the Varieties and Relative Values of Paper," and Articles on those Subjects in Dr. Ure's Dictionary of Arts and Manufactures, Examiner in the Technology of Paper Manufacture to the Society of Arts, &c., &c.

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TO

HIS GRACE THE DUKE OF RICHMOND & GORDON, K.G.,

PRESIDENT OF THE CITY CARLTON CLUB,

WHOSE HIGH CHARACTER AND POSITION

AS

LORD PRESIDENT OF THE COUNCIL

HAS EXERTED SO POWERFUL AN INFLUENCE

IN ARRESTING THE GROWTH OF ABUSES INCIDENTAL

TO MODERN GOVERNMENT,

THESE PERSONAL EXPERIENCES ARE RESPECTFULLY DEDICATED

BY

THE WRITER.

PREFACE.

"Don't have anything to do with the Government."

This is the advice one hears given to outsiders every day, and the following pages are intended to furnish the reason for such advice.

It is believed the experience here recorded, which ranges over a period of seven years, may be advantageously considered by every English subject, and by every delegate of the Crown.

RICHARD HERRING.

City Carlton Club,
April, 1877.

PERSONAL EXPERIENCES

OF

ENGLISH DEPARTMENTAL GOVERNMENT.

As the time at our disposal this evening is limited, I shall not detain you with any unnecessary opening remarks, but it will be desirable, in order to make myself intelligible hereafter, to give a brief elementary outline of practical telegraphy. We have all known from our earliest years that if we take a sixpence and place it in the mouth under the tongue, and then place a piece of zinc of similar size upon the tongue, that we can, by bringing those pieces of metals into contact with each other, produce an electric sensation or current.

Now, in order to generate an electric current for practical telegraphy, it is only necessary to represent this simple experiment by substituting a jam pot for the mouth and a chemical solution for the saliva. A small pot suffices. Indeed, a current has been generated in a percussion cap sufficient to transmit a signal across the Atlantic. Of course, under varying circumstances and conditions the strength of the current must be increased, and this is capable of being done either by increasing the number of pots, increasing their size, varying the metals used or the solution

in which they are immersed. When many pots are used the sheets of metal are placed in regular succession alternately, and being connected together, create a current which flows in a given direction from one end of the battery to the other.

If we now connect two wires, one with the first and the other with the last piece of metal in those pots which together we have termed collectively a battery, the existence of a working current will directly manifest itself by an electric spark on our bringing the other end of each wire into contact, thus completing what is termed a circuit. It matters not, as regards the practical use of the current thus generated, whether the wires attached to each end of the battery and forming a circuit are only a few yards long or as many thousand of miles.

A very simple arrangement suffices for bringing the two ends of a battery circuit into contact, and as long as contact is made or continued, that is until contact be again broken or discontinued, the effect of the current can be manifested at any point of the circuit that may be desired. For instance, if I have a battery in London, from one end of which battery I carry a wire overhead to Oxford, and there connect the wire with an instrument sensitive enough to show the effect of an electric current upon it, and if I then connect another wire with the other side of that instrument at Oxford, and carry such wire properly protected underground back to London, attaching it on my arrival in London to the other end of my battery, I have only to make and break contact in London with my battery in order to produce signals at the same moment upon the receiving instrument at Oxford, which signals may be either of long or short duration according to the length of the battery contact. If I desire to advance upon the simplicity of this form of receiving instrument at Oxford, and to adopt some method of recording the signals, I take a reel, similar to a large cotton reel and having passed an iron spindle through its core or centre, I wind a continuation of the battery or

line wire from London around this reel at Oxford, which will then form an essential part of my new receiving instrument, the return wire completing the circuit between the instrument at Oxford and the battery in London remaining as before. I now place my reel of wire in an upright position, and over the iron core in the centre of the reel suspend a pen or style within an easy distance of a narrow strip of paper, which paper is kept moving forward by clockwork. This provides us with all that is necessary to record accurately at Oxford the length of the signals formed in London by contact with the battery, whether such contact be of long or short duration. Each time the battery current completes the circuit of the line wire it of course passes round the wire on the reel at Oxford, and as long as the current continues, the iron core of the reel is thereby rendered a magnet, and attracts the pen or style towards it, causing a mark to be made on the strip of paper with which it is temporarily brought into contact. This method is simply the system which the Post Office Telegraph Department now uses. A strip of paper moving forward by clockwork receives a longitudinal mark from a style or lever which is thus influenced by the electric current. This mark is broken or interrupted so as to form long marks which are called "dashes," and short marks, which are called "dots." The letter "e" for instance, being a single dot, the letter "t" a single dash. Dot and dash in succession represent the letter "a," whilst dash and dot in succession represent "n," and so on. Each letter is distinguished from that which follows it by a space on the paper ribbon corresponding with the lapse of time in signalling, and each word is distinguished from that which follows it by a still longer space. These so-called dashes and dots being fragments of the same line of uncertain length are very liable to be mistaken each for the other, as practically a short dash and a long dot are indistinguishable, and in order to remedy this defect, I ventured to suggest a method of producing *definite* dots and dashes *transverse* to the slip of paper, which proposed marks

being also more compact than the present irregularly broken longitudinal line, are more legible. It was as far back as the year 1870, that I brought this system under the notice of the authorities of the Post Office, and immediately from that time, I began my personal experience of English Departmental Government. The first difficulty was raised by the Engineer-in-Chief of the Telegraph Department, who condemned the invention because the telegraph signs by my system were printed; and he emphatically informed me that it was a sine qua non that the signs should be embossed. It may readily be conceived that to emboss telegraph signs vertically on a narrow strip of paper at the same time that the paper receiving the signs was being unwound and carried forward by clockwork, occasioned no little difficulty.

To make and break a longitudinal mark drawn on the paper slip by the Post Office system was a very easy matter indeed compared with the suggestion to emboss definite telegraph signs vertically while the paper was running, and with as much distinctness as would be required to form a book for the blind. This difficulty, however, I succeeded in overcoming, and on the 30th January, 1871, an Inspector was sent from the General Post Office to examine and report upon my instrument. On seeing it, however, he at once condemned it because it was an embosser and did not print. Of course, I wrote at once to the Secretary of the Post Office, stating that my first model had been objected to because it did *not* emboss; and that the second model had been condemned, because it *did* emboss, and asking him to be good enough to inform me whether the Department preferred printed or embossed telegraph signs. In reply to my letter, I received the following from the Secretary, dated 6th February, 1871:—

"To the question whether an embossing or ink writing form of apparatus is preferable, I have only to remark that the tendency of late years has been to replace embossing instruments by ink writers, and that there is no intention on the part of the Department to revert to embossing processes."

On the very first page of an official Copy of Minutes and Correspondence, which is in print, occurs the following remark addressed by the Engineer-in-Chief to the Secretary of the Post Office, and bearing a prior date to the letter from which I have just quoted. "Of course, even though there is no doubt Mr. Herring's invention is useless, I will have it seen." And shortly afterwards, 18th April, 1871, the Engineer suggests to the Secretary in a fresh Minute, "we might allow Mr. Herring to try his instrument on a line where it would no doubt die a natural death." Before another month passed, however, the Engineer-in-Chief had abundant evidence that Mr. Herring was not content that his instrument should be tried on any such line. Indeed, on the 18th of the following month, the Secretary of the General Post Office wrote to me, "that my system was much superior to the numerous methods which had been brought forward from time to time during the last twenty years." And shortly afterwards the Secretary proposed that my instrument should be fairly tried by Sir William Thomson and Professor Jenkin, thus ignoring the opinion of the Engineer-in-Chief altogether, who in one of his official Minutes had actually reported that it was "impossible to produce readable signs" by my instrument, and that the instrument was "practically worthless."

The proposal, however, for a full and fair trial of the invention which the Secretary of the Post Office suggested, was couched in terms to which considerable objection might have been taken. For instance, the Secretary proposed that while the trial was pending the Department "even (said he) if it forms an adverse opinion with regard to your instrument will abstain from expressing that opinion," and therefore, he added, "the Department would expect me to abstain from publishing ex parte statements." Thus, he proposed a trial of the instrument by scientific persons as a guide to the judgment of the Department, and yet he admitted that the Department was capable of allowing itself to form an *adverse opinion* with regard to that instrument

while the trial was pending. The arrangement of the terms of reference to Sir William Thomson and Professor Fleeming Jenkin was now proceeded with, and that document was ultimately signed on behalf of the Postmaster-General by the Secretary, and by my Solicitor on my own behalf. The terms of the reference required as follows:—"It will be desirable that you (Sir William Thomson and Professor Jenkin) should test the wire which is to be used before Mr. Herring's instruments are put on it, and that you should satisfy yourselves that the insulation of the wire is effective." "The instrument is not to be condemned or reported against for any mere flaw or accidental hitch in the working as distinguished from faults, if any, in the system; and any fault of detail is to be reported to Mr. Herring, to give him an opportunity of overcoming it before you finally report on the merits of the instrument."

The trial of the instrument was conducted by Messrs. Thomson and Jenkin at the Central Telegraph Office, in the month of October, 1872, but as I observed a manifest want of attention on their part to the terms of the reference I called on the Secretary and detailed the grounds of my objection to any report being written unless the terms of reference were heeded, and the trial of the instrument conducted accordingly. I afterwards called on my Solicitor and handed to him a memorandum of what had passed between me and the Secretary. This memorandum was forwarded to the Post Office by my Solicitor, and the Secretary wrote acknowledging it to be "accurate as far as it goes." After all this had taken place, however, a report was actually made and signed by Messrs. Thomson and Jenkin without further trial, although the Secretary of the Post Office had admitted that further trial was necessary. Of course, Sir William Thomson and Professor Jenkin acted most improperly in departing from the terms of the reference, and especially in accepting a large sum of money from the Post Office for doing what they did. But the instigators of the plot were really the chiefs of the Telegraph Department.

In accordance with the terms of the reference, which required that the instrument should not be reported against for any accidental hitch in the working, but that such should be first reported to me, in order that I might have an opportunity of overcoming it before a final report was made, the referees informed me preliminarily, in writing, that some of the symbols received by my instrument were imperfect; but, they added that they thought it might have arisen from "the rapid and somewhat jerky style of keying practised by the telegraph clerks." This, in fact, was the case. The referees added, in the preliminary report from which I am now quoting, "It is very desirable that an automatic sender should be arranged to send slips with actual messages, so that they may be recorded by Mr. Herring's instrument, as no trials can be quite satisfactory which do not exclude the imperfections of sending." Now, will it be believed that with reference to this suggestion, a special minute, penned by the Secretary of the Post Office, and dated Nov. 18th, 1872, may be seen amongst the papers officially printed. It is as follows:—

"Write to Mr. Fleeming Jenkin with reference to his preliminary report on Mr. Herring's Telegraph Instrument, and request to be informed whether he is still of opinion that the Department should make, at its own cost, an automatic sender for the purpose of further testing Mr. Herring's instrument." To which Mr. Fleeming Jenkin had the weakness to reply: "In answer to your letter of the 18th instant, I beg leave to say, that I think it unnecessary that an automatic sender should be made by the Department, unless the Officers of the Department think it desirable." Of course, this letter of Professor Jenkin is utterly inconsistent with the rules which govern the conduct of referees, and with the ordinary principles of justice. It comes, in fact, to this, that one of the referees writes to one of the parties to the reference to inquire whether that party thinks it "desirable" that a step should be taken which the referee had previously declared "very desirable" for a satisfactory

trial. In effect, the referee applies to one of the parties for directions as to the method of proceeding in the reference. Of course, a reference thus conducted would be an absurdity and its results must be nugatory, and accordingly, the Secretary admitted that something more would be necessary to a satisfactory trial, and even within a month of his correspondence with Professor Jenkin, he gave his consent in writing to my Solicitor for a further trial. The correspondence with Professor Jenkin, bearing date Nov., 1872, and with my Solicitor, Dec., 1872.

It does not properly fall within the scope of a paper on Personal Experience of English Departmental Government to analyse the Report which Sir William Thomson and Professor Jenkin undoubtedly signed, and for which they were paid enormously by the Post Office, although, as we have seen, the Secretary of the Post Office knew at the time that such report was based upon no proper trial, and that he had given his consent in writing for a fresh trial on the terms of the reference. Of course, when the Report appeared, I dealt with it and forwarded my remarks to the Secretary of the Post Office. Indeed, I published the Report myself, with my remarks in parallel columns* so that all who felt any interest in the technical branch of this question might have the fullest opportunity of understanding it.

I believe, however, that the claims which I make for greater speed, greater accuracy, and greater economy, are after all sustained by that Report when it is read by the light of the comments which I have appended to it, and it is very interesting to contrast that Report with the opinions of the scientific advisers of the Post Office at the outset of the discussion, when they denounced my instrument as "practically worthless," and stated that it was "impossible to produce readable signs" by it. It is still further interesting to notice, in the reports which have been made of

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* "*Vis Inertiæ at the Post Office*."—LONGMANS.

its practical working, that several of the leading members of the Telegraph Staff, Messrs. Lumsden, Chapman, Barlow, and others, have actually forwarded commercial messages by my system at varying rates of speed, and at varying distances, both by hand and by automatic transmitter, with the most satisfactory results. No less an authority upon telegraphic science than Mr. Latimer Clark has stated, upon evidence which cannot be questioned, that my transmitting slip for the alphabet has only 82 perforations, and measures only 10½ inches against 164 and 14 respectively on the Post Office system. That my alphabet receiving slip measures less than 5 inches against 15 inches by the system in use at the Post Office. That, instead of the signals failing, as Professor Jenkin has stated, Mr. Latimer Clark finds my instrument capable of recording 1,600 perfect signals in a minute, and that this has been actually accomplished by an instrument which has been subjected to harsh experiments for several years, and was not made by a first-rate maker. Mr. Latimer Clark also affirms that my system would not only surpass the system in use at the Post Office, both in speed and accuracy, but that it would save nearly 75 per cent. in the cost of paper.

The fact of the instrument which I submitted for trial not having been made by a first-rate maker, re-calls another division of my experience of Government Departmental Management. Owing to the influence of the Engineers of the Telegraph Department of the Post Office upon the instrument-maker I first employed, I was compelled to seek for other assistance, and applied to several makers without success, and as this difficulty seemed to become increasingly serious, I mentioned the fact to the Secretary of the Post Office, which greatly annoyed him. In replying to my letter, he says, "you do not appear to be conscious that you are imputing dishonourable conduct to honourable and upright public servants," and after contradicting me five times, saying twice, "it is not true," he informed me that he had written to three of the instrument-makers whose

names I had mentioned, and had requested each of them to explain; and yet, without waiting for their replies, he added, "I must request you at once to withdraw the imputation, which should never have been made." As it was impossible for me to withdraw a single word that I had communicated to him, I simply acknowledged the receipt of his letter, and awaited the result of the enquiries which he informed me he had made. In a few days, I received a letter stating the result of those enquiries, and requesting me once more to withdraw the imputations, to which letter I replied as follows:—

"I do not impute dishonourable conduct to any man when I say that I have reason to fear your letters to the three instrument-makers I mentioned have rather tended to increase my difficulty than to lessen it. I have called on two of the gentlemen in question, and have written to the third. In one case I have been told that the extract with which you favour me is not to be found in the reply given to the letter which you stated you had addressed to my informant. In the second case, I am told that the reply given to you was intended to strengthen rather than to weaken my remarks, and that more than one personal experience was narrated by your correspondent in support of my observations. In the third case, my informant writes to admit that when I called on him he said, 'It was not likely that one would like to offend any one by whom one was employed.' It is quite as unpleasant to me," I added, "as it may be to yourself, to dwell upon difficulties of this nature; but I must ask, as a favour, that you do not write any more positive denials of statements which I make, as I am not the man to write nonsense."

In acknowledging the receipt of this letter, the Secretary of the Post Office was content merely to state that, "he had hoped that I would not have left on his mind such an extremely unfavourable impression of my conduct towards the officers of the department." To which I replied, "Surely it cannot be considered necessary that I should be

careful to uphold a public department at the needless cost of my own reputation. I was surprised to find that you had written to the gentlemen you named, questioning my truthfulness, as I had never known a similar course to be adopted. I have no personal reason to regret that you did so, beyond the extra difficulty it may impose on me to overcome the prejudice of those persons against making instruments for me in future."

It is worth relating that after all this I was introduced by an electrician of the highest standing to a well-known telegraph instrument-maker, who actually declined to carry out my ideas because he also feared to offend the Engineer-in-Chief; but he did recommend me to another maker in the strictest confidence, who made the instrument which has sufficed to furnish the interesting results thus far attained. If the further trial should yet be arranged, which has over and over again been promised, and for which I have prepared at considerable cost, and to attend which trial I have, as requested, engaged and paid retaining fees to two eminent telegraphists to represent me, I have no doubt the same instrument will be found equal to any test that might be deemed requisite.

Before I narrate my experience any further of the Telegraph Department, it will be suitable, as regards the proper sequence of dates, if I now refer to the powerful influence possessed by the permanent chiefs or Secretaries of the Post Office.

The Postmaster-General, in the hands of those officials, is simply a funnel. If any member of the House of Commons presumes to put a question to the Postmaster-General, previous notice must, of course, be given, and the permanent officers of the Post Office then furnish their so-called chief with an answer, and whatever answer they indite the Postmaster-General repeats, without apparently accepting the slightest responsibility for its truthfulness or consistency. Even if the House of Commons orders the production of any correspondence connected with the Post

Office, the Treasury makes application to the Postmaster-General for it, and the Postmaster-General entrusts the preparation of that return to the permanent officers. If those officers omit any essential letters from such return, the Postmaster-General will accept no responsibility in the matter, neither will the Treasury; and even if the omission is pointed out in time to the Postmaster-General or to the Secretary of the Treasury, they entirely disclaim the duty of rectifying the omission. On the 31st July, 1873, Mr. McCullagh Torrens put a question to the Postmaster-General in the House of Commons relating to the matter between the Post Office and myself, and the reply made by the Postmaster-General, which was reported in the *Times* in nine lines, involved no less than seven misrepresentations. I wrote to the Postmaster-General the same day, directing his attention to that report, and I subsequently called at the Post Office and saw his private Secretary, who admitted the *Times* report to be correct, and informed me that the Postmaster-General's remarks were based upon information which he had obtained in the usual way from the permanent officers of the Post Office, to whom he informed me his Lordship had referred my letter, with instructions that it should be attended to by them. No notice, however, has been taken of my remonstrance from that time to the present. In the House of Commons, on the same evening, one of the Members for the City of London moved for a return of all correspondence between the Telegraph Department of the Post Office and myself, and all papers connected therewith, and the House of Commons ordered the same to be produced.

A month later, in consequence of information communicated to me, I wrote to the Post Office, asking to be favoured with a copy of the correspondence, and in reply to my application the Secretary stated that the papers I referred to "would be sent to the Treasury within ten days, and that it would be for the Treasury to decide when they should be printed and circulated." I then

wrote to the Treasury, respectfully repeating the same request, and the answer which I received was "to communicate with the Post-Office authorities and not with the Treasury upon the subject." I replied that "as the Secretary to the Post Office had referred me to the Treasury in the matter of the correspondence which was to be laid before Parliament, I should be much obliged if the Secretary to the Treasury would let me have a copy." This letter I forwarded through the Right Honourable G. J. Goschen, and it elicited the following reply :—

TREASURY CHAMBERS,
21*st October*, 1873.

SIR,

The Lords Commissioners of Her Majesty's Treasury have received your letter of the 11th instant, and they have also received through Mr. Goschen a letter addressed to their Lordships' Secretary, dated the 10th instant, further upon the subject of a Return to an Order of the House of Commons for papers connected with the department of the Post Office. Their Lordships desire me to inform you that the Order of the House of Commons was duly communicated to the Postmaster-General, and that the responsibility of furnishing a proper Return to the Order of the House rests with that officer.

I am, Sir, your obedient Servant,

J. G. DODSON.

RICHARD HERRING, Esq.,
27, St. Mary's Road,
Canonbury, N.

I subsequently wrote to the Lords of the Treasury, as follows :—"With respect to the papers to be laid before Parliament, it is not denied that they will be prepared for the Postmaster-General by the permanent officers of the Post Office. Neither is it denied that very serious mistakes have sometimes been made in matters of the kind by the permanent officers of the Post Office, for which mistakes the Postmaster-General has declined to hold himself responsible. In the present case, it might result in great injustice to me, especially as you do not deny that the Printing Committee of the House of Commons will determine whether the

correspondence shall be printed or not entirely from such papers as are prepared exclusively by the permanent officers of the Post Office and placed before that committee. Surely it cannot be considered that I am seeking an undue favour, when I ask your Lordships, that, in order to insure copies of all the correspondence being laid before Parliament, you will, with a view to accuracy, either permit me to examine that return, or else furnish me with a copy. I append particulars of the correspondence which has passed, the whole of which it will be necessary to lay before Parliament and the Printing Committee, if a proper opinion is to be formed of the case."

Their Lordships' reply was the following:—

TREASURY CHAMBERS, WHITEHALL,
24th December, 1873.

SIR,

I am desired by the Lords Commissioners of Her Majesty's Treasury to acknowledge the receipt of your letter of the 18th instant further on the subject of the papers which are to be laid before Parliament, containing your correspondence with the Post Office, and I am to state that my Lords have nothing to add to their previous letters, and must decline to continue to correspond with you on the questions at issue between the Post Office and yourself.

I am, Sir, your obedient Servant,
JOHN GEORGE DODSON.

Which I answered as follows:—

27, ST. MARY'S ROAD, CANONBURY,
Dec. 24th, 1873.

SIR,

I beg leave to acknowledge the receipt of your letter of to-day's date, informing me that the Lords Commissioners of Her Majesty's Treasury have nothing to add to their previous letters, and must decline to correspond with me on the questions at issue between the Post Office and myself.

It only remains for me to state that I have had no desire to trouble their Lordships with any questions at issue between the Post Office and myself, further than might be necessary to prevent misconception, and that I sincerely regret the final decision of their Lord-

ships to withhold from me the papers for which I have applied, as I am quite unable to conceive any just reason why they should wish to do so.

I remain, Sir, your obedient Servant,

RICHARD HERRING.

Rt. Hon. J. G. DODSON, M.P.

The reason, however, why their Lordships withheld the favour asked by me is sufficiently manifested by the following extract from a letter which I had occasion, shortly afterwards, to address to the Postmaster-General:—

"By the courtesy of the Librarian of the House of Commons, I have examined the return made to the order of that House, and anything more mutilated and unbecoming to the dignity of that House it would be impossible to describe. Not only are the most important letters omitted altogether from the return, but many which do appear are not arranged in proper sequence of dates, hence their meaning is destroyed—of some letters only part appears, while other letters are to be found in fragments scattered here and there in the volume. Some of the letters refer to the correspondence which the making of an instrument to my design had caused, but that correspondence is altogether omitted. No copy is furnished of the letter of reference to Sir William Thomson and Professor Jenkin. The notes of the trial of the instrument which were furnished to the Post Office by my Solicitor do not appear. My remarks on the Report of Messrs. Thomson and Jenkin are likewise omitted altogether. Mr. Latimer Clark's report is also omitted." My letter concluded by expressing a hope that an accurate copy of the correspondence would be forthwith substituted by the Postmaster-General. No notice, however, was taken of this request, and thus the matter still stands. The date of this letter was July 3rd, 1874, and on the 21st of the same month, Mr. McCullagh Torrens put a further question to Lord John Manners, "Whether the meeting between Sir William Thomson and Mr. F. Jenkin, representing the Telegraph Department; and Mr.

Latimer Clark and Mr. Forde, representing Mr. Richard Herring had taken place, and if not, when it would be appointed." Lord John Manners replied, that "arrangements were made, some time ago, for an interview with representatives of Mr. Herring in regard to his invention, but that the meeting never occurred."

To my mind, this evasion is more discreditable to Lord John Manners than to anyone else, because he knew that it was an evasion. "An interview with representatives of Mr. Herring," necessarily meant an interview between Professors Thomson and Jenkin, on behalf of the Post Office, and Mr. Latimer Clark and Mr. Forde on my behalf; and Lord John Manners knew at the time he spoke that neither Mr. Clark nor Mr. Forde, nor myself, had received any notice whatever from the Post Office to meet Sir William Thomson and Mr. Jenkin since it was agreed that a meeting should take place. Lord John Manners also knew that on the 6th of the same month I wrote to the Post Office, requesting that the proposed meeting should be arranged without further delay, and Lord John Manners knows perfectly well that up to the present time no meeting has ever been arranged. Lord John Manners also knows that on the 5th August, 1875, I again wrote to him, and urged that the arrangement made with me by the Department might be carried out, but that, if his Lordship preferred to withdraw from that arrangement, I then asked him to say so plainly, and to reimburse me accordingly. This letter was kindly forwarded to Lord John Manners by Mr. Goschen, who also spoke to his Lordship on the subject, but, although it was expected that Lord John Manners would reply to that letter, no answer has ever been given to it. Lord John Manners, as Postmaster-General, also knows that if any further demonstration were needed of the hopelessness of expecting fair play for an outsider, either from himself or from his subordinates, that their conduct in reference to the recent exhibition at South Kensington would supply it. An exhibition of Telegraphic Apparatus has recently been

held at South Kensington, and the Postmaster-General exhibited the instruments which I entrusted to the Post Office for the purpose of the proposed trial. But, although the instruments were exhibited, they were at first omitted from the catalogue and labelled incorrectly. When a second edition of the catalogue was being prepared, I applied to the Director of the Exhibition for permission to write or revise a description of them. Instead, however, of obtaining such permission, the Director, Mr. Cunliffe Owen, replied, "the General Post Office can alone be recognised as the exhibitor of the instruments, and the only description that can be accepted for the catalogue, is that which has been furnished by it." I then applied to the Postmaster-General, who answered that the "labelling and description of the various instruments exhibited had been carried out under the supervision of the authorities of the Exhibition, and that his Lordship must refer me to them as regards the labelling and description." I again applied to the Director of the Exhibition, who answered that the description of the instruments had been furnished to him by the Postmaster-General.

Thus it is quite evident that it is hopeless to expect candour or straightforwardness from the Post Office. The next instrument to mine in the second edition of the catalogue, numbered 1564 E, was described as printing the signs transversely. Now it cannot be doubted that this erroneous statement was made by the authority of the Post Office, and might be altered by the same authority. It was manifestly so described to produce the impression that the Post Office had another instrument which would do what mine did. But the Postmaster-General would not state this distinctly, because he would then be liable to be asked why, if he had got such an instrument already, he had spent money in trying mine. But although this statement could not be made it might be insinuated, and when I challenged the covertly hostile paragraph, I was told that the responsibility for it rested with the officers of the Exhibition, who, however

met this assertion of the Post Office with a distinct and positive denial.

The same spirit of evasion manifested itself in another recent matter. When the Post Office seriously proposed to try my invention, it was part of the plan that wires should be carried to my house at Canonbury, and connected with a circuit of 200 miles in length. It may seem strange that the Post Office should have done all this in the way of preparation, and then have neglected to complete the trial, but such is the fact. When this was first proposed to me by the Secretary of the Post Office, I replied: "I am quite willing that a wire or wires shall be brought here, on condition that as little damage as possible is done to my property, and that it is completely restored." To this the Secretary of the Post Office answered: "I am ready to have the wire carried into your house, and undertake that no damage shall be done to your house." The wires were fixed in 1871, and have remained, as put up, until quite recently. The Post Office has never claimed to remove them, as such claim would have raised an inconvenient question as to the performance of the agreement with me under which the wires were put up. Finding, however, that I would not consent to any derogation of my right, the Post Office resorted to an artifice. Some men employed by the department gained admission on an unfounded pretext to the garden of my next neighbour, where they contrived to throw a rope over the wires and haul them down low enough to cut them. The wires coming from the Telegraph Station were then coiled in, and the other ends were left dangling from the chimneys of my house, to which they still remain affixed, with all the insulators and appliances just as they were originally put up. Even in my dining-room a memorial exists of the unfaithfulness of the Department, bearing a brass plate, on which G. P. O. is engraved, with the Post Office official number, as it was originally screwed to the wall.

It is not of the slightest use remonstrating with the Post-

master-General, or even seeking an interview with him upon the subject. I wrote to him November 8th, 1876, and mentioned that I had a letter of introduction to him from a Privy Councillor, who was one of the Members of Parliament for the City of London, and that I should be glad if he would see me. On the day following, his Secretary wrote to me that Lord John Manners did not see that any good could result from the interview, and therefore felt compelled to decline to grant it.

I then called at the Post Office, expecting to see his private Secretary, but I was, by his direction, referred by the messenger to the permanent officers of the Department, one of whom, Mr. Blackwood, "did not think it would be consistent with his duty to accede to my request for an interview," and the other, Mr. Tilley, sending word to me by a messenger that "he could not see me."

The day after, I took a letter of introduction to Mr. Tilley from the Right Hon. J. G. Hubbard, M.P., but Mr. Tilley still refused to see me, and on my mentioning these facts to Mr. Langton, the Postmaster-General's private Secretary, he assured me that he could not help me.

I then wrote to Lord John Manners, and asked him "to devise means whereby the monstrous injustice which the Post Office had done me should be suitably requited," and I solicited his Lordship's personal attention to my request, but that letter, dated December 7, 1876, has never been answered.

At this point further action was necessarily diverted from the Post Office, and General Ponsonby, the Queen's private Secretary, on being written to by me replied that "he thought my proper course would be to transmit my memorial to the First Lord of the Treasury." Lord Beaconsfield, however, to whom I forwarded a statement of facts upon which I based a respectful appeal to be "reimbursed for all the time and outlay which I had expended in the public interest at the instigation of public servants," merely acknowledged the receipt of my letter, and informed me that

"my communication should be addressed to the Postmaster-General."

To this letter I replied, January 2nd, 1877, that "the statement which I had already forwarded to his Lordship distinctly set forth the uselessness, so far as I was concerned, of addressing letters to the Postmaster-General, in consequence of the permanent officers of the Post Office, to whom Lord John Manners always referred my communications, having hitherto adopted a course of conduct which the statement referred to sufficiently disclosed." I therefore asked Lord Beaconsfield to favour me by reconsidering the request contained in my former letter. This letter not having been answered, I wrote again a month later, informing his Lordship that General Ponsonby had suggested that I should transmit my memorial to his Lordship, and I repeated my request that his Lordship would cause me to be reimbursed for all the outlay of time and money which I had uselessly expended at the instigation of the Post Office. This letter likewise has never been answered, nor even acknowledged.

The only course now remaining was to petition the Queen with the consent of the Secretary of State, and this course I adopted. In reply the Honourable A. F. O. Liddell, Q.C., wrote to me, March 6th, 1877:—"I am directed by the Secretary of State, to inform you that he has laid before the Queen your petition of the 26th ultimo, and that Her Majesty has not been pleased to give any commands thereon." On the 8th of March, I wrote to the Home Secretary, stating that as my petition of the 26th ultimo was only supplementary to a petition dated the 22nd ultimo, I should be much obliged by his informing me how the matter really stood, and whether he kindly offered any explanation or advice to Her Majesty at the time he laid my petition before the Queen." On the 12th March, Mr. Liddell merely replied:—"Relative to the presentation of your petition to Her Majesty, I am to acquaint you that the practice was followed that was indicated in a letter ad-

dressed to you from this Department of the 6th instant." On the 14th March, I wrote to the Home Secretary, as follows: "I thank you for the letter of the 12th instant, confirming my surmise that a portion only of my petition had been laid before the Queen, and hence probably the reason for Her Majesty having made no commands thereon. You are, however, in possession of all that I desire to embody in a petition to the Queen, and if I have stated anything which in your opinion is unnecessary, I should be much obliged if you would point it out to me." This request, however, was not granted, and on the 29th of March I again wrote to General Ponsonby as follows:—"Since I received your suggestion dated March the 12th, I have been in communication with the First Lord of the Treasury and also with Her Majesty's Secretary of State for the Home Department, in order to obtain redress for the multiplied wrong, which has been done to me by the Postmaster-General. I have, however, received no answer whatever from the First Lord of the Treasury, and the Secretary of State, who is in possession of a petition to Her Majesty, will not inform me whether that petition, which accurately and completely sets forth all that I desire to express, meets his approval for presentation to Her Majesty with a view to its being considered. Under these circumstances, I should be much obliged if you would suggest the proper course for me now to adopt." His reply was the following:—"Major-General Ponsonby begs to acknowledge the receipt of Mr. Herring's letter of the 29th ultimo, but regrets being unable to suggest any course for him to adopt. Buckingham Palace, April 3rd, 1877."

The facts which I have narrated sufficiently manifest the prevailing feebleness and frequent foolishness of existing departmental administration, and I am not called upon to suggest a remedy. But a more practical proof of inefficient departmental management could not perhaps be placed before you than a comparison of the results of the Government working of the Telegraphs, with the results attained

by the Telegraph Companies before the Government interfered with them. The principal Telegraph Companies, whose business the Government acquired, were termed the Electric and the Magnetic. I need not say anything about the Electric Company, as the Government chose the engineer of that Company for Engineer-in-Chief of Postal Telegraphs, which position Mr. Culley still holds.

However, it is a fact that the Electric Company paid a large dividend to its shareholders, and the results of the working of the Magnetic Telegraph Company sufficed to pay a dividend averaging 10 per cent. on the capital employed, the last two dividends being as much as 12 per cent. In contrast with this we have a Parliamentary return, recently prepared at the Treasury, which states that the sum of £294,905 was required to pay interest for fifteen months, ending March, 1876, on the stock created on account of the Telegraph Service amounting to £10,135,450, but that the surplus of gross receipts over gross expenditure in respect of the Telegraph Service in that period was only £103,272, leaving a deficiency of £191,633. Hence the result of the Government working of the Telegraphs suffices to pay rather less than *one and a quarter* per cent. on the capital employed. The Financial Secretary to the Treasury, Mr. W. H. Smith, has since stated, in the House of Commons, that the cost of the Telegraph Service was actually 99 per cent. of the gross receipts.

One word in conclusion. The Government Telegraph Department, after the fullest consideration, promised that there should be a trial of my system—it invited me to prepare for such trial—it induced me to engage scientific gentlemen to represent me at such trial—it arranged and signed terms of reference—it promised to adopt my system if the trial were satisfactory, and it obtained possession of my instruments under a written promise to complete the trial. Without any explanation, however, the Department has broken the promises which it made, and has thus caused me to expend my money and time uselessly. It makes no offer

to reimburse me, and treats my complaint with contempt, apparently in designed attestation of the views of the Postmaster-General, so complacently set forth in one of his published poems:—

> "How to despise bold reason's ceaseless din,
> And reign omnipotent myself within."
>
> From "*England's Trust and other Poems*,"
> *By* LORD JOHN MANNERS.

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RUSSIA AND ENGLAND

IN

CENTRAL ASIA.

A PROBLEM.

NEW YORK:

1874.

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CLASS

RUSSIA AND ENGLAND

IN

CENTRAL ASIA.

A PROBLEM.

The object of this pamphlet is to make some remarks on certain serious aspects of what is called the Central Asia question, or the relations of England and Russia in Asia,—a subject of increasing interest in the present day.

Next in importance to the great phenomenon of the present time in the peopling of the wilds of America by the Anglo-Saxon race, is that of the extension of the Anglo Saxon and Russian power over Asia. The ancestors of the English and Russians, more than three thousand years ago, lived together in Central Asia; they subsequently emigrated, some towards the rising and others towards the setting sun; the Slavonic race settling in Russia, the forefathers of the Anglo Saxon, a kindred Aryan one, in England and America. After a variety of revolutions, the Russian race started from St. Petersburg, as the centre, moving down south, while England taking Calcutta as its basis has moved north, and now both branches of the great Aryan race are again neighbors in Central Asia.

The serious problem, however, arises in consequence of this neighborhood: Are these two great powers to waste their resources in counteracting each other, in reviving the miserable policy of former ages, which regarded with malevolent eyes the prosperity of neighboring States? Are they to enter on a war respecting boundaries which may cost both nations more than 400 millions sterling and throw back civilization for a long period? Or, are England and Russia to take the nobler part of waging a joint war against Moslem fanaticism and Asiatic barbarism, in promoting a Christian civilization and cherishing only a friendly rivalry, in raising out of the dust the prostrate races of Asia and opening out the dark places of the earth, to the light of the nineteenth century?

By Central Asia is generally meant these countries east of the Caspian, but west of Chinese Tartary; with the exception of Persia and Afghanistan, all the lands extending between Russian and English dominion. These regions, now desolate, were the hives which 3000 years ago sent out in swarms the ancestors of the Russians, English, Germans, and Hindus to populate Europe and Southern Asia. Subsequently Central Asia became a link of political and commercial connection between Europe and Asia in the time of the Greeks, Venetians, and Genoese. Peter the Great took a strong interest in Central Asia as a means of pushing forward his scheme of commercial intercourse with India. It was the seat of the Empire of Timur and Genghis Khan, the abode of learning and the centre of Moslem propagandism. For the last half century the country has again been coming into notice in connection with what is called the Central Asia question, i. e. the relative position of England and Russia towards each other in Central Asia. Civilization is invading these dark places of the earth, and while their political condition in relation to Europe has been frequently before the public eye—the fact has been overlooked that any European Government must be a boon to their degraded and oppressed inhabitants.

The present position of Russia in Central Asia is that of a power which is advancing with rapid but quiet strides, moving from North to South in about the same ratio as England has advanced from South to North in India, so that ere long there must be in the nature of things, only the two Empires of England and Russia with their respectively protected native States. All the Eastern powers will practically be crushed between the two mighty Colossi. They will not be able to remain without the sphere of England or Russia's political power—Japhet will thus be dwelling in the tents of Shem. The great question arises out of this, is it to lead to a mutual coöperation or to a hostile suspicious policy on both sides, in fact to an armed peace with all its evils of increasing taxation—the Moslem and Hindu grinning at the Christian brethren.

It is true the question is one, also, of boundaries among remote barbarous tribes, and of the policy to be pursued towards them by two great Empires. The subject is certainly somewhat obscure, from its lying with far distant Asiatic nations—but the issues are very clear; they are these: Are the disputes between England and Russia regarding boundaries in Central Asia to be left in the hands of political intriguers, or military writers—whose arbitrament is the sword—the

ultima ratio regum? Are they to be allowed to increase until both parties may be so exasperated that a spark may kindle a flame which would burn away to the irreparable injury of civilization, and the upsetting much of the work of progress in Asia?

Look at the large sums that have been spent by England, Germany, and America during the last quarter of a century on education, Missions, and civilizing agencies in India. Duhamel, a Russian General, laid down a plan of an invasion of India in 1854 by offering, as former conquerors did, the plunder of India to the wild tribes of Central Asia as an inducement to them to join Russia in the invasion. In the memoranda of the General for the Russian officers about the period of the Krimean war, the plan is laid down in the calmest manner that the fierce Turkomans and Afghans should be allured to the Russian standard by the hopes of the plunder of India, that the native population should be first encouraged to revolt, and then abandoned to their fate. We know from the experience of the Indian mutiny what that means. It would be something like Paris under the Commune—scenes of the most thorough anarchy with the worst characters in the front, the scum always rising to the surface—the destruction of Churches, School Houses, Libraries. On the other hand, retribution would take place in Central Asia and much of Russia's beneficent and civilizing action would be suspended.

It is fearful to think what a destruction of property and the fruits of civilization might result during a period of anarchy; we know what it was in the mutiny.

Almost all the pamphlets that treat of Central Asia have been written by military men, and from their stand point they seem to take for granted that England and Russia in Asia are natural enemies, that their interests must necessarily clash, and that there is no possibility of an understanding. These writers have shown great ability, but they have judged the question from too exclusively an Indian or military stand point. They do not take into account the general policy of Russia and England, the complications of European politics, and that Central Asia is only one stage with which Russia has to deal in her Empire march on to the North East, when her sway, to the advantage of the native races, will, we hope, extend from Samarkand to Pekin. They discuss the question in the samepoint of view as those did who wrote on the French Invasion of England, who ignored altogether the relations of France with other countries, and the various peace agencies.

Doubtless there are breakers ahead, and it requires a skilful pilot to guide Russia and England through these, without coming into collision.

While the correspondence on the Central Asia Question published by the House of Commons is very satisfactory in showing how the two governments of England and Russia, approaching one part of the Central Asia question with calm well disposed minds, have decided points that a few years ago might have kindled the torch of war, viz., The Afghan boundary; but the next and more difficult one is the limits of Russia in regard to the Persian side of the Indian Empire. England here, with justice, objects to a nearer approach of Russia. To use the language of the Earl of Clarendon, "the only apprehension we had was, that the nearer approach of the Russians and intrigues with native chiefs might keep the native mind in a ferment and entail upon us much trouble and expense."

The Governments of England and Russia have shown themselves anxious to remove anything which would endanger the good understanding between the countries, avoiding the danger of future collision by friendly explanations. It is well the matter is in the hands of the Governments, as the ignorance of the people in both Russia and England on subjects relating to Asia is so profound that any stump orator or sensational journalist in either country might raise the war cry of Russian invasion of India, or English jealousy of Russian progress,—Anglo phobia or Russo phobia.

In an interview that Sir A. Buchanan, the English Ambassador of Russia, had with the Czar at St. Petersburgh in 1869, while both were strongly in favor of continuing the good understanding that exists between the two governments, the Ambassador stated that the English and India governments "looked upon the events which had recently taken place in Central Asia without any feelings of distrust or apprehension, and that they would neither take measures themselves nor sanction intrigues on the part of others, of a nature to disturb the tranquillity of the Provinces now occupied by Russia, but his Majesty should remember that the number of persons in England is very great, who are directly and personally interested in the prosperity and tranquillity of India, and that in the event of a conflict between Russia and Afghanistan, or of the entrance of Russian troops into Provinces bordering on India, the fears of these persons might be worked upon by the party of action in India, and *public opinion become so excited* that her Majesty's government might be obliged to take

measures to satisfy it *entirely inconsistent with the views they at present entertain;* that his Majesty was doubtless aware of the extreme sensitiveness of persons whose *interests* are affected by political eventualities, and he could appreciate the influence which the apprehensions of such persons might have on public opinion in England." The Emperor answered that he quite understood this, and that it was only natural; that there was no probability of any event occurring to create such a state of feeling. The Czar said this in 1869, and the same year the Earl of Clarendon, the English Foreign Minister stated to Baron Brunnow, the Russian Ambassador, "her Majesty's government felt no suspicion nor alarm respecting the policy of Russia in Central Asia, —but that these feelings were not generally shared either by the British or the India public,—that unless stringent precautions were adopted we should find before long that some aspiring Russian General had entered into communication with some restless or malcontent Indian Prince, and that intrigues were rife and disturbing its Indian population on the frontiers, against which her Majesty's government would have a right to remonstrate with Russia." But practically it would be more than a remonstrance; it would be a demonstration which might any day lead to collision. It is only last year the move on Khiva aroused a very strong feeling in England and India, which, had it not been for the conciliatory disposition of both governments, might have led to serious measures.

Though the respective governments are friendly, the dangers are increasing, "from the acts of military officers, or restless political agents on the frontier, who are at a great distance from the seat of government, and there was always some frontier to be improved, some broken engagement to be repaired, some faithless ally to be punished." Prince Gortchakoff admitted to the English Ambassador in 1869 "there is doubtless a desire among Russian military men, who wish to gain decorations, that we should make further conquests in Central Asia." The English Ambassador, on the other hand, stated "that if any circumstances should occur to disturb the present good understanding of the two governments, *it could only come from the unauthorized action of officers on the frontiers.* But he might rest assured that the officers of the government of India would not be the offending parties,—but the events of the last two years did not inspire him with great confidence in the moderation of the Russian officers employed in Central Asia, and *imprudent proceedings on their part,* notwithstanding the most friendly intentions of her Majesty's government, might

occasion the most serious evils, for if Russian troops were to enter Afghanistan or *the provinces contiguous to India*, a cry for defensive measures which would find an echo in every town in England, might excite public opinion to a degree which would force the government into a policy of antagonism to Russia, which it is their anxious desire to avoid." The Russian Secretary admitted there might be Russian officers in Central Asia on whose prudence no reliance was to be placed, and Prince Gortchakoff stated that the military commanders in Turkistan had all exceeded their instructions in the hope of gaining distinction, and they consequently, one after the other, had been recalled.

England dislikes war and cares little for military glory; she justly honors a pacific policy, and is adopting the sound view of non-intervention,—but one thing is clear: let any imminent danger threaten India from foreign interference or intrigue, and the nation will wake up as one man to suffer no plundering of this, "the brightest jewel in the British crown."

England looks on India not only as a gain but also as as trust, and would contend with all her might for its retention as Russia did for Poland—it would be therefore a war *ad outrance*. The *commerce* between England and India amounts to one hundred millions sterling, and this is on the increase; in 1814 it was only seven millions sterling. *Railway* property is invested in India to the amount of nearly one hundred millions sterling, held chiefly by English shareholders. What a sphere India has opened out to English families. There are few English families who are not more or less connected with India. India yields a revenue of fifty millions sterling, the greiter part of which is spent on Indian objects; still it supports a large body of Englishmen and upholds English interest.

Russia has 160,000 soldiers in the Caucasus who have now little to do and who chafe under inaction. They want new scenes of excitement and what they call glory; but in Russia, according to the new military arrangement, there will soon be more than 2,000,000 soldiers. Central Asia is an open field; thither ambitious spirits are pressing; we know from India what this means, and how difficult it is to keep them under control; and we have seen, as in the Alabama case, how the mercenary interests of Liverpool ship owners imperilled the relations between England and America.

These Russian officers influence the press and the higher functionaries of State; they fret away in a state of inaction,

they long for excitement and the prizes of war. Their object on the frontier of India would be to create in each state a Russian party among Orientals, ever looking hopefully to Russia for encouragement and support, while cherishing a spirit of suspicion towards England.

In the nineteenth century are we then to have the spectacle of the interests of two mighty empires imperilled, and the cause of progress thrown back? For what? The personal interests of some Generals and political officers, who have not to pay the cost of war, whose promotion is to be secured by the ruin of millions?

Are England with 240,0000,000 Indian subjects, and Russia with one-seventh of the globe in her possession to be placed in collision in connection with a few millions of acres of land?

Happily for mankind, generals anxious to fight, and politicians wishing to fish in troubled waters do not always lead their governments. In the higher regions there are men with cooler heads than panic-struck frontier officers. We shall quote the views of two of these men on this question:

Lord Mayo, late Governor-General of India, states: "Any one that contributes in the least degree to bring about a thorough *entente cordiale* on Asian questions, between Russia and England, will perform a service to humanity, to the interests of civilization, and the welfare of the subjects of both Governments."

Sir H. Rawlinson, member of the Council of India in the Geographical Society's Meeting 24th June, 1872, states: "Through these countries (Yarkand, Kashgar Kulja,) Russia and England must ultimately be brought in contact. It is a law of nature and must happen. The great object should therefore be, so to conduct relations between the two great empires, that when the contest took place it should not be in the form of a collision but as an ordinary approach of civilised nations, and under these circumstances he did not apprehend any danger."

Prince Gortchakoff, the Foreign Minister of Russia, in a despatch to Baron Brunnow, in 1869, has expressed a sentiment regarding India which we believe finds an echo in many a Russian breast the military excepted: "I am not now speaking of the old prejudices respecting the British possessions in India. It is evident that there is not now a single civilized state in the whole world which would not prefer seeing those countries under the enlightened rule which extends to their well-being and progress, to seeing them fall back into a state of anarchy and barbarism." Would that Prince Gortchakoff could inoculate Russian frontier officers with these views.

The majority of enlightened Englishmen, on the other hand would reciprocate the same feeling toward Russia as regards the fall of the Tartar power in the Crimea, the subjugation of the semi-savage Caucasians, and of slavery and Moslem fanaticism in Central Asia. Sir C. Wingfield, M. P., gave utterance to a sentiment in the House of Commons to which the English press is reechoing, "I do not believe Russia will retire from Khiva, and, what is more, I hope she will not. I wish to see this nest of robbers—these scourges of humanity—reduced to order and civilization."

The great desideratum, then, is a good understanding between the two powers regarding Central Asia.

By good understanding we do not mean a concurrence in all points of policy. There may be friendship between nations as between individuals, while in various matters they agree to differ—*unitas in diversitate*. Such has been the case between England and France, between England and America. John Bull and Brother Jonathan have sometimes given each other hard knocks, but yet they have been, on the whole, good friends, and have entertained for each other a great deal of family affection and mutual respect. So with Russia as the head of the Slavonic, and England of the Anglo Saxon race; there must necessarily be some discordance, but the rent does not reach the foundation.

We have an illustration of this principle in the case of America and Russia, though one be a semi-autocratic and the other a republican Government; though there be a wide difference in points relative to religion and social life, yet there exists a good understanding between the two countries. Now, England has stronger commercial, literary, and religious ties with Russia than America has, while from the experience gained in her Eastern Empire she can appreciate to a higher degree the Slavic or semi-oriental spirit so deeply rooted in the Russian people.

What we mean then by a good understanding in Central Asia is that amicable arrangement of frontiers, on the principle of non-intervention with each other, or one party playing off native states against the other. So, that in the language of Prince Gortchakoff, "the two countries could, in all security, devote themselves to the accomplishment of the mission of civilisation, *each in her natural sphere*, even lending; it may be, one to the other, that assistance which is the natural consequence, in our day, of the universal diffusion of intelligence and progress."

We have encouraging examples of both empires mutually

carrying out the principle of non-intervention. The Khan of Khiva sent an ambassador on a recent occasion to the Governor General of India, asking him to interfere against Russia on behalf of Khiva. The Governor General, Lord Northbrooke, sent a decided refusal, and recommended him to settle his differences with the Emperor of Russia. Similarly Lord Lawrence replied to a request of the same kind from the Emir of Bokhara, reminding him of the murder of the British officers in that country, and declining to interfere.

On the part of Russia, we have the beginning of a similar policy. An ex-ruler of Afghanistan applied to Russia to help him to conquer the throne of Kabul stating it was indispensable for the interests of Russia. The Russian Governor replied that the relations of Russia with England are of the most friendly and harmonious character, and declining to interfere in any way, Russia being determined to abstain from all interference with the internal affairs of Afghanistan, "which is under the protection of the English Government, who are friendly towards that of the Czar." Prince Gortchakoff has given a positive assurance that Afghanistan would be considered as entirely beyond the sphere in which Russia might be called upon to exercise influence."

We have another illustration of this lately, when the Czar, hearing of the great distrust and alarm created in England by the contemplated expedition against Khiva, and the alleged occupation of the Valley of the Attrek, highly to his honor sent over Count Schuvalof to England in order to allay the anxiety that evidently existed in the public mind. The Count, who was the Emperor's trusted friend, stated "that his Majesty was determined that in the pending settlement of the precise boundaries there should be no cause of difference between the two countries."

There is an improved tone in English public opinion with regard to Russia—people are beginning to recognize that Russian advance in Central Asia is no more necessarily connected with hostility to British India than has been the English advance in India with designs against Russia in Central Asia. Both countries have been impelled by causes arising out of the state of the native governments—a pack of cards which, when you throw one down the rest follow—in both empires the governments have been forced on by the tide of military and commercial enterprise.

That dog-in-the-manger jealousy which would rather leave Central Asia in its barbarism and under the yoke of Moslem fanaticism than have it under the sway of Russia, is rapidly

dying away. The English press, with few exceptions, while justly arguing in favor of defensive measures and a watchful policy, for the protection of our Indian Empire against malcontent native chiefs or the intrigue of ambitious military officers, has hailed Russia as a pioneer of trade and civilization in Asia. And why should not the links of trade, social and literary intercourse which have for a long period been drawing England and Russia closer together in Europe, be extended to Asia? Is the immortal hate between two Christian powers to be exhibited in the face of Moslem and Hindu? Is the manifest destiny of Asia to be christianized and civilized by England and Russia, to be thrown back because of the intrigues of miserable Afghans and Persians?

England has too often looked at Russia through Polish spectacles, while few Russians visited England to give a more correct view of things—but matters are changing. Englishmen are beginning to travel in Russia, and books on Russia are coming more and more into the English market. The ties of commercial intercourse are increasing between the two countries. There is no country in Europe where English literature is more highly appreciated, than in Russia. The employment of more than 500 English governesses in Russia indicates the increasing study of the language. Englishmen have stood high in the Russian service, and the commercial interests of the two Empires have been linked together for three centuries.

The wave of civilization ought not to be arrested in its Eastern course: Russia has a noble career before her, extending for several thousand miles from Turkistan to the Amoor territory; the Moslem and the Chinese must recede, as she advances.

The prodigious strides Russia is making in internal reform, must naturally extend to her dependencies. We find in Turkistan municipal institutions established, schools opened, newspapers in the native languages, roads cut through mountain passes, and the merchant following in the wake.

Of course Russia is greatly behind England, but she is advancing; roads, and trade follow in the line of her conquests. Look at the Southern coast of Russia now, with its second Liverpool in Odessa, and contrast it with what it was under Tartar or Turkish rule. We hope the day is not far distant when Central Asia will receive, like Southern Russia, the rays of modern enlightenment.

Now, what the Romans are considered to have done as pio-

neers for Christianity, and what England has been doing in the East, with a similar effect, surely may be allowed to Russia, though *haud pari passu*—she has great efforts to make before she can get a body of agents like those of the East India Company. But still progress is making, roads are opening out the wastes of Central Asia, schools are being established, trade and commerce are being protected. Its peasantry are being improved and the great reforms which are being carried out in Russia must react on Central Asia.

"Dixon's Free Russia" and "Eckhard's Russia" will furnish a considerable amount of information on the reforms now being carried out in Russia.

We have referred to the obstacles presented to this good understanding by frontier officers and political intriguers. There is a more serious one in the Turkish question. As long as this remains in its unsettled state we cannot expect full harmony in Central Asia, but the long discussed subject of the Turkish Empire is even more of an Austrian or German question than of an English one, as General Fadaief has shown in his able pamphlet. The Palmerston party in England has lost much of its ascendancy, and public opinion in England has also lost much of its confidence in the permanence of Turkish rule, and is more inclined to a policy to settle the question of Constantinople among the Five Powers by a system of compromise and concession.

The Russian press and public opinion have regarded the suspicions excited in England and India by Russian progress in the East, as caused by simple jealousy of Russia. It is very important for England to remove that impression, by showing that she has viewed with satisfaction the great reforms and progress in Russia as invaluable for the Russian people and calculated to bring the two countries into closer sympathy, —that Russia's development is a source of pleasure to Great Britain—that slave-hating Albion and serf-emancipating Russia have a mighty link of connection—and that her jealousy is not towards the Russian people, but towards unscrupulous military agents, not from any unworthy feeling of Russia's advance in the scale of nations but from the dangers of collision between the Empires, owing to treacherous diplomatists and intriguing military officers—that these men are sparks in a house of combustibles and ought to be brought under strict control. They should not be allowed to set a house on fire in order to roast their goose in the flames.

Some say the matter is in the hands of the two governments,

and is progressing satisfactorily—what can public men do? Very true, but there are ambitious and military influences, on both sides, brought to bear against a peace policy, and there ought to be some counteractive to support both the governments. The devil is not asleep, and passions on both sides are in danger of being enlisted—men gradually drift into war.

The voice of the press and the platform ought to be heard on this subject. Public opinion is at sea as to the points at issue, and requires enlightenment. If military men and fortunous diplomatists mislead the press and nothing be done against them, then is the cause of peace lost. One step towards informing public opinion on this question might be the offer of a prize of 300£ for the best essay on the following subject: "A good understanding between England and Russia on the Central Asia question necessary, not only to the welfare of both Empires, but also to the promotion of Christianity and civilization in the East: The obstacles to this good understanding and the best way of removing them."

As in the "Alabama" case, public opinion and the press contributed very much to the peacable solution of the question by showing that the cost of a war would far exceed any gain arising from the arbitrament of the sword, and that the points in which the interests of both countries coincided were far more numerous than those in which they differed. So ought it to be in this question of frontiers between England and Russia —but a watchful eye must be kept on frontier officers and frontier tribes. Persia, Afghanistan and Bokhara, with their miserably poor populations and barren lands, must be reduced to order, and taught by England and Russia that they are not to involve two great Empires.

Public opinion in France, Germany and America should not look on this Central Asia question as a mere private quarrel or duel between two nations, like that recently between France and Germany—apart from what would be a melancholy spectacle in seeing two such Empires making Asia a cock-pit for the amusement of Hindu and Mahommedan spectators—there is this serious matter, that in the present state of international relations, it would be difficult to prevent a general conflagration.

Some foreigners say this question relates to obscure, half-savage tribes, in a distant country, with barbaric names we cannot pronounce. What have we to do with the petty wars among jealous commanders? But in the case of two great

Empires there is the saying, "When your neighbor's house is on fire you must look to your own." A spark of war lighted up in Central Asia would spread all over the globe, wherever England and Russia have possessions, and involve other nations in the conflagration. The history of the world gives illustrations enough of this. It might precipitate the long dreaded solution of the Eastern question. The materials of combustion are very numerous in Turkey, Austria and France, and the flame once lighted, there is no fixing the limit of its ravages.

America, as removed out of the sphere of political antagonism, united to England by the bonds of family, literary, and commercial ties, and standing on the best terms with Russia, having a stake in Asia in connection with her missionary and mercantile enterprises, might do something as a peace-maker, in the way of recommending a policy of conciliation and concession between England and Russia—by bringing public opinion and the press to bear on it, and by showing from her standpoint how eminently conducive to the progress of Christianity and civilization in the East is an accord between Russia and England—how the points in which they agree are far more important than those in which they differ.

The pacific solution of the Central Asia question not only affects England and Russia, but also the following classes in various countries:

1. *Merchants:* The opening of the Suez Canal has thrown India and the East open to the commerce of the world. England allows free trade in India. Italy, Germany, France, Spain, Holland, and America are availing themselves of the new route. The trade between India and Europe now exceeds 100,000,000 sterling, and is rapidly on the increase.

2. *The friends of human progress* have viewed with delight the advance Russia is making in the career of social and judicial reform; in the extension of her railway lines, and in the completing of her mighty work of Serf emancipation. These require a series of years, and the devotion of large sums of money for their successful accomplishment. The same remarks apply to British India with its teeming population of 240,000,000, whom England is gradually training up to self-government. Any one acquainted with British India will see in the history of that Empire how the ambition of generals and the unscrupulousness of statesmen have been overruled by GOD to give a government to that country which, with all its shortcomings, has been a pioneer to Christianity by its protection of the rights of conscience, its promotion of education, its opening

out its dark places of the earth to the light of Christian civlization, its repressing Hindu and Moslem fanaticism, its raising up a middle class independent of priestly influences.

3. *The opponents of Moslem barbarism and ignorance.* This Central Asia question is one of the last phases in the history of Mohammedanism—the crescent flag, which in quite recent times moved up to Vienna, which ruled in Hungary for a century and a half, (for Hungary was a Turkish province at the period when the English founded Calcutta,) which swept over the Mediterranean for centuries, is now fading and tattered. The Moslem wave which once threatened to sweep over Europe, and to establish the rule of the Koran in London itself, is now receding; the mystical Euphrates is drying up; and no two Powers have contributed more to this than England and Russia, who may be truly called the Kings of the East. England has scotched the snake of the Mohammedan temporal power in Delhi and Lakhnau, while Russia which groaned under the Moslem yoke for three centuries is doing it in the Caucasus, Samarkand, and Bokhara. Central Asia has been the chosen seat of the last stronghold of Moslem fanaticism, where even English officers have had to submit to death because they would not embrace the Koran. But now all this is changed, since the Russian flag waves over the towers of Bokhara the holy, the Mecca of Central Asia, and the Moslem can no more be forced by the whip into the Mosque.

The expiring hopes of Mohammedanism rest on the last frail reed—a hostile policy between England and Russia in Asia. General Kaufmans, the Governor General of Turkistan, writes in June, 1870: "There is reason to believe that the excited feeling which at this moment exists in the Khanate of Central Asia, bordering on our frontier, partly arises from the conviction which prevails throughout these countries, and more especially among the Afghans, that *owing to an implacable hatred of one another the Russian and English must sooner or later come to blows in Asia.*" What an exemplification of the old adage, "See how the Christians hate each other!" Orientals understand the policy of *divide et impera;* "when rogues fall out honest men come by their own." When the Turkish guns were thundering at the gates of Constantinople, the Greeks were discussing obscure questions of dogma, but both parties were swept away by the Turks. Every *Mullah* prays daily that the two infidel powers of England and Russia might destroy each other's influence so that the true believers in Islam might carry off the spoil.

4. *The friends of Missions and Bible Circulation.* The British and Foreign Bible Society states in its last Report on Bible circulation in Russia:

"Russia in its geography, dominion, variety of races, multiplicity of population, and diversity of languages is a world in itself, and opens a boundless prospect of Bible circulation:—indeed, in the whole range of the Society's operations there is no country under the sun in which the development of Bible work has been measured by equal breadth and rapidity, and every movement forward seems to reveal a still limitless region beyond which multitudes are stretching forth their hands to crave the bread of life."

5. *The friends of the Masses* have a deep interest in this question. The idea of raising the people, the prostrate millions is one that has never entered the oriental mind—priests and princes have had the full sway in the East for ages, to the neglect of the dumb millions. Both Hinduism and Mohammedanism have treated the lower classes as the dust of their feet. Now motives of self-interest if no higher, must lead Russia, as it has led England in India, to side with the masses, as all the danger of revolt lies with a fanatical priesthood and feudal chieftains.—This has led her in Poland, as in Turkistan, to take a liberal course and quite in accordance with the glorious serf-emancipating policy of the Czar.

We conclude this very imperfect view of a great question with quoting the noble remarks of the Prime Minister of England, when speaking lately in the House of Commons on the subject of the proposed marriage between the son of Queen Victoria and the daughter of the Emperor of Russia:

"I may also say that, although in the vicissitudes of history the time came when we were compelled from special circumstances to regard the Russian Empire as a hostile State, yet God forbid that we should contemplate the recurrence of such a period —(cheers)—or, what is still worse, that we should accustom ourselves or allow ourselves to cherish sentiments of hostility or suspicion against a Power with which we are in alliance. (Cheers.) I rejoice, and I believe the house and the country will rejoice, at the formation of this new tie of amity between two great empires; and permit me to say that if we were to exercise a choice as to the period of time at which we could desire that a relation of this kind should be formed between the Imperial family of Russia and the Royal House of the United Kingdom, we may well be pleased that it has happened in the

reign of an Emperor like his Imperial Majesty, who has already signalized his sway, not by schemes of reckless aggrandisement, nor by mere pomp and display in the face of a too-easily admiring world, but by that one great act of legislative wisdom and humanity which stands almost without a parallel in history, and which is of itself enough to make a reign not only honorable, but illustrious—I mean the emancipation of the serfs of Russia. (Cheers.) Lastly, I rejoice that it falls to me to make this proposal at a time when, even within the last few months, the Imperial Government, under the direction of its illustrious head, has given more than one practical assurance of its desire to pursue a friendly policy towards this country. (Cheers.)

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